AMERICAN GAS ASSOCIATION MONTHLY

Vol. IV No. 8

AUGUST, 1922

GOOD service to consumers is indispensable. But good service is not enough. You have got to talk about it—yes, crow about it, if you will. The best article ever devised could never reach the fulfillment of its popularity unless its merits were ding-donged into the heads of the public. You never can talk enough about the good qualities of the gas business. Keep it up in season and out of season. Be a crank on it.

J. B. MYERS.

C O N T E N T S

VOLUME IV AUGUST, 1922 NUMBER 8

AUTHORS

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American Gas Association Monthly

Vol. IV AUGUST, 1922 No. 8

Uninterrupted Service

The end of the second week of the railroad shopmen's strike finds a steadily growing list of train delays and cancellations—freight and passenger.

A fuel shortage, probably accompanied by inflated prices, seems almost inevitable this fall and winter. Anthracite production has virtually ceased and the non-union bituminous mines are supplying only about half the country's solid fuel requirements. The nation's stock of coal above ground has been reduced to what experts generally regard as the danger point. Cause—the coal strike.

Interrupted service!
And the cost?

It has been estimated that 10,000,000 working hours are wasted every day because of strikes and interrupted service. At a moderate appraisal this means a money loss of $5,000,000 a day, or of $30,000,000 a week. Thirty million a week is a billion and a half a year.

The actual loss of working hours and wages, however, is but a small part of this cost of interrupted service. Curtailment of production is another. Merchants are suffering from delayed shipments, tardy arrival of employees, both due to the partial interruption or partial suspension of railroad service. If the movement of mail should be interrupted, many financial disasters and tragedies might easily occur. The cost if it could all be calculated would mount into the billions. And besides the cost, if an attempt were made to list all the inconveniences, all the increases of hazard, all the menaces to health and happiness, these few words would rapidly overflow the space allotted to them.

Interrupted service, whatever the causes, strikes, disasters, business depressions, panics, might truthfully be said to be one of the greatest known menaces to the civilized world, industrially, financially and humanely.

But in the very realization of this fact have not we, the gas industry, one of the nation's greatest industries, something to be proud about? Yes, something to be proud about and, moreover, something to shout aloud about to the whole world. And isn't this the time to do our shouting—the time to do our shouting and impress our public anew with our record—

UNINTERRUPTED SERVICE SINCE THE FIRST INTRODUCTION OF GAS!

It is the time, since these interruptions have come at the end of an era of depression, just when everything was set for the big come-back with everyone's shoulder at the wheel, to gain the greatest effect.

Yes, we believe that this is the time, and we believe that this is, moreover, the very best opportunity presented in years to increase the confidence of the public in our industry and improve those public relations which are so vital to the healthy growth of our industry.

UNINTERRUPTED SERVICE!

AMERICAN

GAS ASSOCIATION

MONTHLY

Vol. IV AUGUST, 1922 No. 8

Department of Health of New York City Investigates Effects of Gas Combustion

The following is a report made by Dr. Joseph A. Shears, M. D., sanitary expert of the Department of Health, New York City, published in the Weekly Bulletin of the Department, and once more clearly refutes the old time fallacies about the burning of gas. (EDITOR'S NOTE.)

TO the Deputy Commissioner:—I have the honor to submit for your information the following report on combustion of illuminating gas. I have taken this matter up in detail so that the subject can be viewed from each and every angle. Perfect combustion of illuminating gas has a highly beneficial effect on the quality of air. It has been assumed that because of the burning of gas, and the discharge of products of combustion into a room a vitiation of the atmosphere must result. The combustion of illuminating gas produces, from a chemical standpoint, four different effects upon the air taken from a room, mixed with the gas in the burner and discharged back into the room.

First: The amount of oxygen is reduced.

Second: The amount of carbon-dioxide is increased.

Third: A very small amount of sulphur-dioxide is added.

Fourth: Dust and bacteria are removed by incineration.

The first, second and third effects are caused by oxygen combining with the carbon and sulphur maintained in the gas and this oxidizing process generates heat which is sufficient to produce the fourth effect. The physical effects produced upon the air are increased temperature, circulation of the air in the room is accelerated and ventilation from the outside is increased.

As the quality of the air in the room at any time depends upon the interaction of the incoming air upon the products of combustion discharged from the

burners and the organic matter exhaled from the lungs and skin of the occupants of the room, it is necessary to investigate the intereffects of all three. On account of the tendency of heated air to expand, become lighter and rise, the presence of any source of heat in a room produces a certain circulation of the air, which serves a double purpose. In the first place, the heated air is cooled by contact with successive portions of the relatively cool walls, and in the second place the temperature in the upper portions of the room tends to increase, while that in the lower portion tends to decrease below that which would prevail without circulation. This produces an unbalanced pressure from the outside, tending to draw fresh air in at the bottom of the room through crevices, joints and other openings, and also to a greater extent than is ordinarily realized through the walls themselves. The same action tends to expel the air in the upper portion of the room in the same manner, and this tendency is, of course, greatly augmented by increased facilities for ventilation.

In considering the concurrent effects of heat sources and the incoming air upon the average quality of the interior air at any moment, it is necessary to inquire into the nature and effects of the vitiating substances. Generally speaking, these are divided into two classes: Those emitted by the respiration, both from the lungs and the skin of the people in the room; second, those emitted by the illuminants. The first class includes bacteria of those diseases which are transmitted by bacteria which, when taken from the air into the system through the mouth or skin, will produce their characteristic diseases. As a matter of fact, the supposedly fresh air from the exterior is often heavily laden with bacteria of this character.

More commonly than any other are felt the effects of the vitiation produced by the organic matter, in a greater or less advanced stage of decay, exhaled by the lungs. This produces the stuffiness in a poorly ventilated room which is sometimes ignorantly attributed to carbonic acid gas.

Carbonic acid gas is present in the purest of outdoor air in the proportion of about four parts in 10,000 and produces no discomfort or ill effects if less than 225 parts in 10,000 of air are present. On account of the ability of gases to diffuse through even the tightest walls used in building construction, the proportion of carbonic acid gas in interiors rarely rises above 20 parts in 10,000 though for experimental purposes this proportion has been made as high as 50 parts in 10,000. This was accomplished only by resorting to exceptional means to secure a high percentage of this gas. Thus, practically speaking, it may be said that it is impossible in practice to obtain enough carbonic acid gas in an ordinary room to produce the slightest effect upon the bodily functions, even when the most sensitive tests are employed to detect such effects.

Sulphurous acid gas when present is in such almost infinitesimal quantities that it is disregarded as far as the effects on health are concerned. While it is, in the quantities found, harmless to the human organism, it has a decided sterilizing effect as regards disease germs.

While it is true that carbonic acid gas artificially produced—that is, by gas combustion—is entirely inocuous in any quantity met with in human habitations, it must not be assumed that such quantities of this gas exhaled from the lungs,

may be regarded as an indication of sanitary conditions. On the contrary, even 15 parts of carbonic acid gas in 10,000 if arising from respiration of human beings, indicates the presence of organic matter in such quantities as to be highly obnoxious or even harmful.

In this connection it should be noted that the vitiation of air by human beings is generally expressed as percentage of carbonic acid gas, because it indicates the amount of organic matter which has been given off in the same period, and while the latter (which is a real source of pollution) is difficult to measure, the carbonic acid gas is easily determined.

From a sanitary standpoint, therefore, figures regarding the quantities in which carbonic acid gas indicates harmful conditions apply only to this gas when thrown off by the lungs and not to the same gas produced by artificial means.

It is evident that the practice of rating each gas burner as equal to a certain number of human beings in vitiating the air in interiors is opposite to the dictates of common sense.

Investigators on the effects of carbon-dioxide report as follows:

Dr. Angus Smith shut himself in an airtight chamber with a lighted candle, and remained until the candle was extinguished by the high carbon-dioxide content produced (229 parts in 10,000). He felt no ill effects.

Dr. Richardson removed all the carbon-dioxide from air that had once been breathed, and found that animals introduced into such air dwindled away rapidly and died.

Pettenkoffer found that 100 parts of carbon-dioxide in 10,000 parts of air was not injurious to human beings, while one-tenth the amount of carbon-dioxide derived from lungs and skin exhalations rendered the air unfit for human habitation for any length of time.

Proof of a similar nature from the experiments of recognized authorities might be multiplied almost indefinitely.

Another feature of even greater importance is the effect upon the eye. Dr. Rideal's tests showed that:

(a) The sensitiveness of the eye to light as measured in the perception test diminished very markedly after exposure to the electric light, while no corresponding effect is noticeable after the eye has been subjected to gas light.

(b) The power of co-ordinating and using the motor muscles of the eye-ball recorded in the orbicular muscle-tests was diminished to a greater extent after subjection to electric than to gas light.

(c) It was found that the ciliary muscles of the eye are more accommodative after three hours' exposure to a 50 c.p. light from the Darwin incandescent mantle than after a similar exposure to a 50 c.p. electric light.

(d) The acuity of vision measured by the retinal-test again shows that the optic nerve or center was more susceptible in the case of gas illumination.

It will be seen that all the results point strongly in the same direction—namely, that gas light as used in these experiments is less fatiguing to the eye than electric light.

Nearly all of the fatal cases of gas poisoning are due to carelessness, or are deliberate, with suicidal intent.

Accidental causes of gas poisoning may be classified as follows:

1. Filthy burners.
2. Flare back in bunsen burners.
3. Turning flame low enough to be extinguished by gust of air.
4. Pilot light out, gas turned on.
5. Defective tubing.

6. A—Turn on gas; B—turn out; C—on again—these are extremely dangerous conditions, any one of which give rise to large volumes of carbon-monoxide.

In all causes of death due to gas poisoning it will be noted that one of these six conditions was the cause of death.

Recommendations

It is suggested that—

(1) No hot water heaters be permitted in bath or other confined rooms unless same are flue connected.

(2) All automatic hot water heaters be flue connected.

In other conditions flue connections should not be made, whenever it can be avoided, as there is a danger of back draft.

The question of flue connecting is, at present, the subject of an investigation by the American Gas Association, and their findings and recommendations will be ready soon. It is respectfully recommended that no action be taken by this Department until the recommendations are noted.

Your attention is called to the action of the Board of Aldermen, December 14, 1920. The matter of gas tubing was referred to the Commissioner of Health for action. The Department has made an intensive study of gas tubing and submitted a report: "Standard Performance Specifications for Flexible Gas Tubing."

An Article Worth Reading

The attention of our members is called to the article "Food, Fuel and Smoke" by Floyd W. Parsons, appearing in the July 8th issue of the SATURDAY EVENING POST. It is decidedly good reading, carries a strong message and could well be absorbed for wide personal distribution by every gas man in the country.

Connecting Gas Appliances to Coal Burning Appliance Flue

PROF. A. H. WHITE, University of Michigan

The following opinion by Prof. A. H. White, Professor of Chemical Engineering, University of Michigan, a widely known authority, clearly and conclusively treats of the question of connecting a gas water heater to the same flue to which a coal furnace or stove is connected, and should be read with interest by every gas man.—(EDITOR'S NOTE.)

THE question to be considered is: Is it possible that a heater turned on, but not lighted, could discharge its unburned gases into a flue in such a way that an explosive mixture might work its way back to a stove or furnace connected to the same flue.

Illuminating gas will not ignite when mixed with air until the mixture is heated to at least 1000° F., which is an incipient red heat. A mixture will not ignite at that temperature if it contains less than 8 per cent of gas to 92 per cent of air, or more than 20 per cent of gas to 80 per cent of air.

The stack gases from a domestic furnace or stove never leave at any temperature approaching a red heat and are continually losing heat as they pass through the smoke flue and up the chimney. Good practice will not allow any gas heater to be connected into a furnace flue immediately at the point where the smoke pipe leaves the furnace. We may assume that in any proper setting the gases from the gas heater would have to travel back through several feet of smoke against the current of smoke gases before they could become ignited. Since the specific gravity of illuminating gas is less than half that of air, the unburned gases would rise and pass out of the chimney with the warm products of combustion from the furnace instead of settling against this stream of warm gases into the furnace.

Even assuming that some illuminating gas did work back through the smoke pipe to a furnace or stove, it would be necessary that it should be diluted with not more than twelve volumes of air or inert gas in order that it might be non-explosive. The burners of a gas heater are designed to suck in about five volumes of air to one volume of gas, and an additional amount of air is sucked through the openings in the base of the heater. This additional amount of air depends on the draft in the flue. We may assume in the most unfavorable case, when the flue draft is very poor, that no additional air is sucked in, and that the gases escape from the heater into the flue diluted with only five volumes of air.

The ordinary type of gas water heater used in dwellings will not burn more than two cubic feet of gas per minute. This would give 120 cubic feet of gas and 600 cubic feet of air escaping from the heater per hour. In order that this 120 cubic feet of gas should be non-explosive, it would have to be mixed with 800 cubic feet of air or non-com-

bustible gases so as to bring the total volume of 120 cubic feet of gas and 1400 cubic feet of air. One pound of coal furnishes about 400 cubic feet of flue gases so that the 800 cubic feet necessary for dilution in this assumed case would be provided by two pounds of coal.

In other words, a heater burning two feet of gas a minute might be turned on without lighting, the mixture of gas and air passed into a flue along which were traveling the products of combustion from a stove burning only two pounds of coal an hour, and the resulting mixture of gases would at once be rendered non-explosive on account of their dilution, even if they were immediately brought into direct contact with a flame. Since, however, the combustible gases escaping from a gas heater thus improperly operated would have to travel back against the current of increasing dilution with every inch of such travel, it is evident that it is entirely safe to allow a gas heater to be connected in such a way that the gases from it would have to travel back through a flue against the smoke gases for a few feet before coming in contact with the coal fire.

In answer to further questions:—

2—A furnace burning soft coal will sometimes give off combustible gases so that explosions in the smoke flue may ensue. The entrance of unburned illuminating gas into the smoke flue at a distance of several feet could not, however, initiate an explosion even under these conditions, since the temperature would be too low to ignite the mixture.

3—It is better to pass the flue from a gas heater into a warm chimney where there is a good draft, rather than into a cold flue where the draft may not be good enough to prevent the fire from smothering.

4—Specific gravities will vary with the kind of gas and coal burned and the amount of excess air in the product of combustion, but may be averaged as:

Air	1.00
Coal Gas	0.45
Products of combustion of coal gas	0.95
Products of combustion of soft coal	1.00

From the foregoing consideration, it will be evident that gas explosions cannot be caused through the practice of connecting a gas stove or heater into the same flue with a coal stove, provided the connections are so made that the gases from the gas heater would have to work their way back against the current of smoke gases through several feet of flue before reaching the coal fire.

At the meeting of the Executive Board held on June 28, Alanson P. Lathrop was elected to the Board to fill the place made vacant by the death of Emerson McMillin.

The above pictures show the exhibit of the Bureau of Standards, Washington, D. C., at the recent Convention of the Natural Gas Association at Kansas City.

Program of Business Sessions*

1922 Convention

GENERAL SESSIONS

(Convention Hall—At Ocean End of Steel Pier)

Tuesday Morning, October 24, ten o'clock.

Meeting called to Order and Opening Remarks—D. D. Barnum, President, Boston, Mass.

Report of Secretary-Manager—Oscar H. Fogg, New York, N. Y.

Membership Report and Election of Individual Members.

Report of Treasurer—H. M. Brundage, New York, N. Y.

Address of the President—D. D. Barnum, Boston, Mass.

Report of the Time and Place Committee—1923 Meeting.

Amendments to Constitution and By-Laws—Wm. J. Clark, Mt. Vernon, N. Y.

Report of Committee on Standard Gas Appliance Specifications—W. T. Rasch, New York, N. Y.

Address—"How Far Are We Justified in Applying the Cost of Service Principle in the Gas Industry"—Hon. Carl D. Jackson, Member of the Railroad Commission of Wisconsin and Former President, National Association of Railway and Utility Commissioners.

Showing of A. G. A. motion picture "Around the Clock with Gas" in the Auditorium, second floor front of Steel Pier.

EXECUTIVE SESSION

(Only Company Member Delegates Eligible to attend)

Election of Company Members.

Election of Directors.

Election of 1923 Nominating Committee.

Election of Committee on Resolutions.

Wednesday Morning, October 25, ten o'clock.

Report of Committee on Rate Structure—J. D. Shattuck, Chester, Pa.

Address—"Public Relations"—J. S. S. Richardson, City Editor, Philadelphia Public Ledger, Philadelphia, Pa.

Address—Hon. W. D. B. Ainey, Chairman, Public Service Commission of the Commonwealth of Pennsylvania.

*The following program is presented in its tentative form so as to give the information to the members of the Association as far in advance as possible. It must be remembered, however, that it is purely tentative and subject to change or rearrangement. (Editor's Note.)

Report of Committee on Accident Prevention—Charles B. Scott, Chicago, Ill.

Report of Commission on Resuscitation from Carbon-Monoxide Asphyxiation—For the Commission—Dr. Yandell Henderson and Dr. Howard W. Haggard of the Laboratory of Applied Physiology, Yale University, New Haven, Conn.

Thursday Morning, October 26, ten o'clock.

"The State Committees on Public Utility Information"—B. J. Mullaney, Chicago, Ill.

Address—"The Importance of Accounting in Rate Cases"—A. W. Teele, New York, N. Y.

Address—John S. Irvine, President, National Association of Master Plumbers.

Paper—"The Preparation and Sale of Coke for the Domestic Market"—R. L. Fletcher, and W. G. Rich, Providence, R. I.

Friday Morning, October 27, ten o'clock.

Report of Committee on President's Address.

Paper—"The Gas Appliance Price Situation"—A. P. Post, Philadelphia, Pa.

Paper—"Selling the Gas Bill"—

Open Forum.

An innovation in the program this year will be the Open Forum. The time so alloted will be taken up with the discussion of management and policy problems. Advantage should be taken of this opportunity by the delegates to discuss other important subjects not on the program.

ACCOUNTING SECTION

(Auditorium, Second Floor, Steel Pier—Boardwalk Front)

Tuesday Afternoon, October 24, two-thirty o'clock.

Opening Remarks and Report of Chairman—Ewald Haase, Milwaukee, Wis.

Report of Nominating Committee and Election of Officers—W. H. Pettes, Newark, N. J.

Report of Committee on Consumers Accounting—W. A. Doering, Boston, Mass.

1. Description of Typical Systems of Consumers Accounting.
2. "Critical Analysis of Such Systems from the Standpoint of Organization"—Karl Jorgensen, Bureau of Commercial Economics, Chicago, Illinois.
3. Description of System "Bookkeeping Without Books"—W. H. Cassell, Baltimore, Maryland.

Wednesday Afternoon, October 25, two-thirty o'clock.

Report of Committee on Consumers Accounting (Continued)—Report of Sub-Committee on Small Gas Company Systems.

Address—"Uniform Classification of Accounts for Gas Corporations"—Geo. C. Mathews, Chief Statistician, Railroad Commission of Wisconsin, Madison, Wisconsin.

Thursday Afternoon, October 26, two-thirty o'clock.

Paper—"Main Extensions"—H. J. LaWall, Philadelphia, Pa.
Report of Committee on Continuous Inventory of Fixed Capital—H. C. Davidson, New York, N. Y.
Report of Committee on Uniform Classification of Accounts—W. J. Meyers, New York, N. Y.
Report of Committee on State Representatives—W. A. Sauer, Chicago, Ill.

COMMERCIAL AND PUBLICITY AND ADVERTISING SECTIONS

Meeting Jointly
(Vernon Room—Haddon Hall)

Tuesday Afternoon, October 24, two-thirty o'clock.

Opening Remarks and Report of Chairman (Commercial Section)—A. P. Post, Philadelphia, Pa.
Report of Nominating Committee and Election of Officers (Commercial Section).—Dorsey R. Smith, Baltimore, Md.
Report of Committee on Sales Stimulation—Wm. Gould, Boston, Mass.
Report of Committee on Industrial Sales—F. F. Cauley, Chicago, Ill.
Report of Chairman (Publicity & Advertising Section)—A. A. Higgins, Providence, Rhode Island.
Report of Nominating Committee and Election of Officers (Publicity and Advertising Section).

Wednesday Afternoon, October 25, two-thirty o'clock.

Address "Automatic Water Heating"—C. E. Bartlett, Philadelphia, Pa.
Address "Salesmanship in Public Relations"—E. J. Cooney, Lowell, Mass.
Paper—"Possibilities in Heat Application of Modern Gas Appliances."

Thursday Afternoon, October 26, two-thirty o'clock.

Address—"Why Gas Companies and the Plumbing Trade Should Cooperate and How"—National Trade Extension Bureau.
Address—"Relation of Home Cooking to Gas Sales"—Mrs. Anna T. Peterson, Chicago, Ill.
Paper, "Advertising to Stimulate Sales of Merchandise and Appliances."—J. F. Weedon, Chicago, Ill.

TECHNICAL SECTION

(Convention Hall—Ocean End of Steel Pier)

Tuesday Afternoon, October 24, two-thirty o'clock.

Opening Remarks and Report of Chairman—C. N. Chubb, Davenport, Iowa.
Report of Nominating Committee and Election of Officers—R. B. Harper, Chicago, Ill.

Report of the Committee on Carbonization and Complete Gasification of Coal—L. J. Willien, Boston, Mass.
*General Topics for Discussion.

Wednesday Afternoon, October 25, two-thirty o'clock.

Report of Committee on Distribution Design—R. C. Cornish, Philadelphia, Pa.
Paper—"Further Presentation of the Doherty Ideal Distribution System"—R. G. Griswold, New York, N. Y.
Paper—"Description of a Distribution System in which Mains 4 in. or Larger Will Be Used"—B. V. Pfeiffer, Philadelphia, Pa.
Report of Committee on Deposits in Gas Pipes and Meters—R. L. Brown, Pittsburgh, Pa.
*General Topics for Discussion.

Thursday Afternoon, October 26, two-thirty o'clock.

Paper—"Scrubbing and Condensing Facilities of a Coal Gas Plant and Their Effect Upon Tar and Ammonia Recovery."—J. R. Wohrley, New York, N.Y.
Paper—"Scrubbing and Condensing Facilities in a Water Gas Plant."—F. W. Steere, Detroit, Michigan.
*General Topics for Discussion.

MANUFACTURERS SECTION
(Auditorium, Second Floor Boardwalk Front)

Monday Afternoon, October 23, two-thirty o'clock.

Address of Chairman—John S. DeHart, Jr., Newark, N. J.
Report of Secretary—C. W. Berghorn, Jr., New York, N. Y.
Report of Nominating Committee—George D. Roper, Rockford, Illinois.
Election of Chairman and Vice-Chairman.
Introduction of New Officers.
New Business.
Adjournment.

*Arrangements have been made to publish reports of certain Technical committees in the A. G. A. Monthly. Under the above item—whenever more time is available at a session than is required for the discussion of reports and papers listed—the presiding officer will call for a brief discussion of the work of committees whose reports have been published in the Monthly.

Mr. Charles A. Munroe, Vice President of the Peoples Gas Light and Coke Company, Chicago, Ill., has been elected to the directorate of that company at a recent meeting of the Board of Directors.

The Secretaries' Gallery

"TO promote closer relations and cordial cooperation in all branches of the gas industry." This can well be applied to the personal equation as well as the every day contact in business relations. In other words to promote better acquaintanceship — the get together, know-the-other-fellow-better feeling.

Unfortunately but too few of our members have the opportunity to really accomplish this—practically only once a year at our annual conventions. Those who do attend them know how much pleasure is derived from meeting the other fellow and shaking his hand—how much pleasure from the personal side as well as how much benefit from swopping views and ideas with him. Once met, the signature at the bottom of a letter means so much more than just the path left by the pen.

This handicap, for such it is in a sense, applies even more strongly to those Associations affiliated with us. So we have decided to do what we can to remedy this in a small way. Of course, what we earnestly want and hope to be able to do, is persuade at least the secretaries of these associations to meet with us at our convention—meet and become acquainted. A hundred per cent attendance would be ideal.

So therefore, with this in mind, we are offering here a preliminary move. Unable to say, for instance, Mr. Allen, Secretary of the Canadian Gas Association, I want you to know Mr. Burke, Secretary of the Indiana Gas Association, and then standing aside and watching them shake hands and become acquainted, we can say through these pages, Mr. Allen, this is Mr. Burke's picture and likewise Mr. Burke, this is Mr. Allen. You know his name, you have seen his signature at the bottom of a letter, but this *is* Mr. Allen.

We therefore have published what we might term the Secretaries' Gallery in the hope that it may assist in making our future relations even more pleasant and profitable than they have been in the past. Look at these gentlemen. See how many you can recognize. In case you cannot recognize them all, consult the identification below and then resolve to attend the convention at Atlantic City, October 23-27, and meet these men in person.

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No. 1—E. J. Burke, Sec.-Tr., Indiana Gas Association.
No. 2—A. G. Schroeder, Sec.-Tr., Michigan Gas Association.
No. 3—G. H. Smith, Sec.-Tr., Southern Gas Association.
No. 4—R. V. Prather, Sec.-Tr., Illinois Gas Association.
No. 5—H. E. Mason, Sec.-Tr., New Jersey Gas Association.
No. 6—M. B. Webber, Sec., Gas Sales Association of New England.
No. 7—F. D. Beardslee, Sec.-Tr., Missouri Association of Public Utilities.

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No. 1—J. N. Cadby, Exec. Sec., Wisconsin Utilities Association.
No. 2—G. L. Cullen, Sec.-Tr., Pennsylvania Gas Association.
No. 3—W. M. Henderson, Sec.-Tr., Pacific Coast Gas Association.
No. 4—J. L. Tudbury, Sec.-Tr., New England Association of Gas Engineers.
No. 5—H. R. Sterrett, Sec.-Tr., Iowa District Gas Association.
No. 6—G. W. Allen, Sec.-Tr., Canadian Gas Association.


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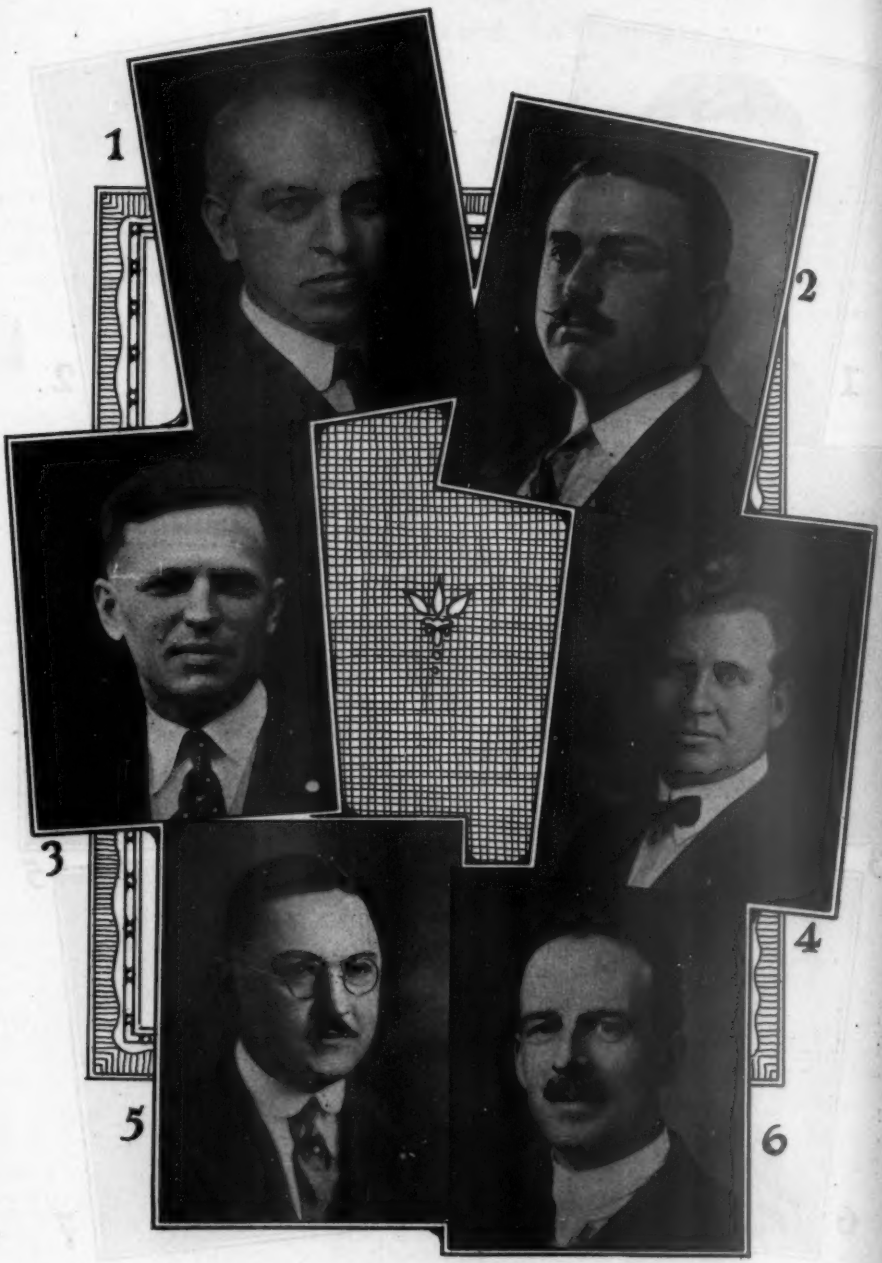
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GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. HALS, New York, N. Y.—(Alternate Representative) W. J. SERRILL, Philadelphia, Pa.
Award of Beal Medal—D. D. BARNUM, Boston, Mass.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Chamber of Commerce, Membership In—CHARLES A. MUNROE, Chicago, Ill., National Councillor.
Cooperation with Educational Institutions—F. C. WEBER, New York, N. Y.
Finance—E. H. ROSENQUEST, New York, N. Y.
Gas Safety Code—W. R. ADDICKS, New York, N. Y.—(Alternate Representative) DONALD MCDONALD, New York, N. Y.
National Fire Protection Association—W. R. ADDICKS, New York, N. Y.
Rate Fundamentals—R. A. CARYER, New York, N. Y.
Rate Structure—J. D. SHATTUCK, Chester, Pa.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
United States National Committee of the International Commission on Illumination, Representative on—HOWARD LYON, Gloucester, N. J.
Nominating—A. P. Lathrop, New York, N. Y.

Thoughts on Rate Making

R. B. BROWN, General Manager, Milwaukee Gas Light Company, Milwaukee, Wisconsin.

THE gas industry is one of the oldest of our modern living, growing, industries, and because of this very age it finds itself possessed of some of its greatest handicaps.

Gas rates were brought to an established basis generations before any real knowledge of cost accounting had been developed. When, through cost analyses, a few men began to suspect, and later to know, that much of their business was being transacted at a loss, the forces of custom and of political public opinion seemed to be so strongly against any radical revision of rate basis that it was impossible to revise rates on the foundation of cost of service.

As the years have gone by all or nearly all who have expert knowledge of the gas business, have come to believe that some radical change of basis for rate schedules is imperatively necessary. Modern methods of living are adding thousands of unprofitable consumers from the well-to-do classes, unprofitable through the abuse of our wide open rates under which we offer readiness to serve without charge. Thousands demand connections who never intend to use enough of our product to pay for the cost of maintaining their service. Yet in fuel or other emergencies they make full use of the opportunity thus afforded to abuse our unscientific and unprotected rates.

Because of the great cost per customer of this readiness to serve, we may never see rates put in effect which will completely adjust the rates charged different classes of users on a cost-of-service basis. But the gas man should never lose an opportunity to show to the real users of gas, to the rate making bodies, to all students of economics, that the abuse of the old and obsolete systems of rates by those who do not need nor use the product, is costing a great deal of money to those who do need

and who do use it. Comparatively few of our public understand that a large and increasing proportion of our product is sold on a strictly competitive basis and that if rates and regulations are not made elastic enough to allow us to use competitive methods of manufacture and sale, necessarily the buyers, on a non-competitive basis, must pay the increased cost per unit caused by loss of the competitive business.

The recent tendency to base rates on a fixed percentage of return on a close or sometimes under valuation of the investment in the property, naturally under political control, tends more and more toward a rate of earning little or nothing in excess of the cost of money, which means a cost-of-service basis or even less.

No sound basis for the future development of this great industry can be established which does not include a thorough appreciation that the cost of service must be reflected in the rates granted—an opportunity must be given to adjust commercial or quantity rates without an undue amount of red tape being unwound—enough latitude must be provided in the regulation of quality of gas furnished to allow of modification of processes and use of matetrials not available under most of the existing regulations, and finally, recognition must be made of the principle that the best talent and initiative cannot be kept active in the service of this industry under any system of returns which deprives the workers in all ranks, as well as the investor, of any reward for better than usual operation and service to the public.

We may not say that these things cannot be done, for English gas companies are doing two of them with fair success. They enjoy freedom to elect the quality of gas served under proper restrictions to safeguard the public, and they now have sliding scales on earnings by which the successful management shares with its public all increases in earnings through that success. The third item (fair basis of rates) is largely an accomplished fact in our own electric rates and even in some of the water rates charged in American cities.

Changes in Utility Rates*

This article gives a clearly understandable resume of systems and methods of rate changing, a subject of growing importance. (EDITOR'S NOTE.)

SEVERAL methods are provided in the Commission statutes for changing rates. If the company desires relief, it may, in many states, file a new schedule of charges. If the Commission fails to act upon it within thirty days the new schedule takes effect by operation of law. In some states Commissions have the power to suspend the proposed schedules for a specified number of days. If the Commission suspends the rates, the schedule is put on the Commission docket and a time set for a hearing at which testimony is taken and the reasonableness or unreasonableness of the new schedules determined. If the schedule filed by the company is found reasonable the Commission orders it put

*From Public Utilities Report.

into effect; if not, the Commission fixes what it deems to be reasonable rates and directs that they be established. The Company may, if it desires, file a formal petition for increased rates, which is placed upon the regular docket and which in due time comes on for a hearing before the Commission, which then determines whether or not the company is entitled to relief and fixes rates accordingly. In some states this is the only way the company can act. If consumers believe rates are not what they should be, they may petition the Commission for relief. The statutes also authorize the Commissions on their own motion to examine into the reasonableness of schedules.

The Massachusetts Department of Public Utilities has disapproved of the policy which requires Commission approval of all increases. In recommendations to the legislature, the Department called attention to the fact that, under a statute requiring certain utilities to obtain Commission approval for rate increases, there never had been any proceedings for this purpose up to 1917, but that when the war unsettled all values and costs, notably of the essential elements in the production of gas, revision of schedules became necessary. "In contrast, other companies," said the Department, "were free promptly to readjust and increase their prices to meet the extraordinary and constantly shifting conditions. This resulted in a natural misunderstanding by communities whose prices were increased by the companies serving them apparently at will, while neighboring communities had an opportunity to make inquiries and be heard before similar increases were sanctioned. It led to a vigorous effort in the last legislature to enact a law requiring all increases in price to be approved by this Commission. A review of the experience of the past three difficult years convinces the Commission of the importance in the public interest of placing squarely upon the managements of these utilities the duty of establishing their own prices or rates, subject only to revision by this Commission or such other public body as may exercise its functions. Any other policy is sure to result in a divided responsibility and a spiritless management. The true function of the Commission is that of a critic rather than of a manager. This is the aim of statutes relative to rates filed by railroads, street railways and companies engaged in the transmission of intelligence by electricity. What is needed, in the Commission's opinion, is not a requirement that all increases in prices or rates shall be approved before going into effect, but provision for notice of any proposed changes, and power given to the Department to revise rates initiated by the company where justice to the public so requires, and thus remove the inequalities between companies which conditions have created."

The Sliding Scale

Another means by which rates may be changed is by use of an automatic device known as the London or Boston sliding scale, a benefit sharing arrangement. The statutes of a number of states provide that gas or electric corporations may establish such an automatic adjustment of charges and dividends, provided that the sliding scale shall have been filed with the Commission and the schedules and rates approved by it. These statutes are broad enough to permit of the adoption of the

London or Boston sliding scale or of a different kind of a sliding scale by which charges are made to vary automatically with changes in certain operating costs. When the "sliding scale" is referred to, however, it is usually the London or Boston sliding scale that is meant. A brief reference to these will, therefore, be made.

The charters of the early English gas companies contained no limit either as to price or rate of dividend. They were granted at a time when competition was the favored policy for all kinds of business. But when, as in this country, the unsoundness of this, as applied to public service enterprises, was perceived, dividends began to be limited to 10 per cent in some of the charters and, finally, the policy of fixing a maximum selling price was adopted. But the companies were also permitted to make up dividends falling short of the prescribed yearly rate. In addition to that, earnings in excess of the statutory dividend were allowed to go into a reserve to be used to meet extraordinary claims or demands. Any excess beyond this was to be used to reduce the price of gas. Upon the consolidation of the Sheffield Gas Consumers Company and the Sheffield United Gas Company in 1855 the authorizing act made the rate of dividend, the salary of the managing director and the remuneration of the directors vary with the price of gas; but the so-called London sliding scale was not adopted until 1875. This scale consisted of an initial or standard price with a standard rate of dividend and a ratio for increase or decrease of dividend which was fixed in the early act at one quarter point for each 1 d. (2 cents) increase or decrease in the price of gas above or below the standard price.

The Boston Sliding scale was copied after the English Acts. A special committee was appointed to consider the London sliding scale, and a minority of this committee recommended its application to the Boston Consolidated Gas Company. The sections of the act fixing the standard price, standard dividend, and the sliding scale ratio are as follows:

"Section 1. From and after the thirtieth day of June in the year nineteen hundred and six, the standard price to be charged by the Boston Consolidated Gas Company for gas supplied to its customers shall be 90 cents per 1,000 cubic feet, which price shall not thereafter be increased except as hereinafter provided. From and after the said date the standard rate of dividends to be paid by said company to its stockholders shall be 7 per cent per annum on the par value of its capital stock, which rate shall not thereafter be increased except as hereinafter provided.

"Section 2. If during any year ending on the thirtieth day of June the maximum net price per 1,000 feet charged by the company has been less than the standard price, the company may, during the following year, declare and pay dividends exceeding the standard rate in the ratio of one-fifth of 1 per cent for every 1 cent of reduction of said maximum net price below the standard price."

Section 5 of the Boston Sliding Scale Act provides that, if the profits amount in any year to a sum larger than necessary to pay the dividends the excess may, to the extent of 1 per cent per annum of the par value of the capital stock, be invested to form a reserve fund, which may accumulate until it amounts to one-twentieth of the par val-

ue of the capital stock. The fund may be used from time to time: (1) "To meet any extraordinary claim, demand, or charge which may at any time arise against or fall upon the company from fire, accident, or other circumstances which due care and management could not have prevented; (2) to enable the company to pay the dividends authorized under the act whenever in any year the clear profits of the business are insufficient to pay such dividends."

Section 9 of the act provides for a revision of the standard price at any time after the expiration of ten years from June 30, 1906.

"The sliding scale system of regulation," said the Massachusetts Board of Gas and Electric Light Commissioners, "makes reductions in price to the consumers depend solely upon the desire of the stockholders for greater dividends. It rests upon the belief that their desire will prove an effective stimulus to such increased skill and efficiency in management as will make lower prices to consumers probable. For its proper operation the conditions upon which the relation of price to dividend are established should be stable and likely to continue for a sufficient period to demonstrate the effectiveness of the incentives to good management. Otherwise the system will achieve little by way of actual regulation of price."

After the adoption of the act the Boston Consolidated Gas Company reduced its price of gas on June 30, 1906, from 90 to 85 cents, and on July 1, 1907 to 80 cents. The last named price continued to January 1, 1918, when it was increased to 90 cents. Meantime the company paid a dividend of 7 per cent for the year which ended June 30, 1907, 8 per cent the following year, and 9 per cent thereafter until July 1, 1913. During the succeeding years it paid 8 per cent in 1914, 8½ in 1915 and 1916, and 7 in 1917 and 1918.

Under the statute providing for this sliding scale the company could not increase the rate of return beyond this point, without a revision of the standard price, although abnormal war time operating costs entitled the company to relief from a standard fixed in contemplation of normal business conditions. The company, therefore, applied to the Board of Gas and Electric Light Commissioners for permission to raise the standard price from 90 cents to $1 per thousand cubic feet, which was granted for a temporary period. The only company subject to the Boston sliding Scale Act is the Boston Consolidated Gas Company.

The sliding scale has been applied to an electric company by the Indiana Commission. In fixing a reasonable schedule of rates for such a utility, the Indiana Commission established a schedule of primary "basic service rates" and then, assuming a basic return of 6½ per cent, on account of war conditions, instead of 7 per cent which would be deemed reasonable in normal times, established a sliding scale of charges as follows: For every 10 per cent reduction in rates taken as a whole, an increase in earnings, on the ascertained valuation, of ½ of 1 per cent to be allowed; and for each subsequent 10 per cent reduction in rates, similarly applied, an increase of ½ of 1 per cent; and for each 10 per cent increase in rates, a reduction in the rate of return on the valuation of ½ of 1 per cent; 5 per cent reductions or increases of rates likewise to be attended, upon application, by ¼

of 1 per cent increases or reductions in earning power.

These rates were put into effect in 1917. The Commission said that the times were not only most opportune for, but almost demanded, a far more elastic rate structure than it had been the policy of American regulatory bodies to construct. The Commission declared the time was right for the adoption of self-adjusting devices that automatically would meet changing conditions and that, with justice would levy penalties and benefits alike on both the utility and the public served. If it were proper to create a common interest between the public utility and the communities served on the basis of reducing rates to consumers and increasing the rate earning for the utility, a far better condition would be created than that which existed. Under existing conditions the community being served had nothing in common, in interest, with the public utilities serving it, and generally there was decided hostility between the two, which led to radical propaganda both on the part of the patrons and public utility companies. Such an elastic rate schedule was best suited to the simplest utilities such as gas and water companies, but with proper supervision and inspection to ascertain that the plant was not starved or the standards of service lessened in order to reduce rates and thereby increase earning power and to insure also that the benefits were shared with the public served, it could be safely applied to an electric corporation. The practical result of the application of the principle, however, proved unsatisfactory. The company came before the Commission for an increase of rates and the application was granted. Due to economic conditions and the rapid increase of costs the plan was found to be impractical and was abandoned.

Rate "Schedule Riders"

Another method adopted for the purpose of securing automatic changes in rates without the formality of rate hearings sprang up during the war. The rapid and wide fluctuations in certain operating costs led to the establishment of "riders" to rate schedules by which standard rates were varied upward or downward according to the increase or decrease in the price of coal and oil, and in some instances of changes in the cost of labor. These rate riders were quite frequently authorized.

In holding that a procedure whereby changes in rates with a change in the price of oil used by a gas company might be made without the delay necessarily incident to hearings was in accordance with the California Public Utilities Act, the California Commission said that the cost of oil was a large part of the cost of gas service, representing approximately 40 per cent of the total charge. It was practically impossible to forecast what the price of oil would be. Sudden changes in oil prices might so affect the earnings of the utility as to require immediate change in rates, or result in serious loss to the company or in unfair rates to the consumer. Under the method theretofore followed, delay resulting from necessary hearings had caused loss of earnings to the gas companies and had in certain instances affected their credit.

But these automatic adjustments have been regarded as only a temporary expedient and, with the return to more normal conditions, they have been rejected by some of the Commissions. The Virginia Commission stated in one case

that a coal rider is proper and fair, but in another proceeding the Commission, in continuing a coal clause in an electric rate schedule in order to save the company from disaster in the event of extraordinary increases in coal prices, said that it was desirable to minimize the operation of the coal rider as much as possible, so that consumers might more readily apprehend what the cost of current would be.

In a case in which coal clauses in rate schedules were declared to be legal, Chairman Ainey of the Pennsylvania Commission said that they were not unjust or unreasonable in the results following their application. Coal clauses, he declared, were generally adopted by electric and some other utilities to meet the unusual conditions which confronted them and the country during the unsettled times incident to the war, when for a period the prices of coal fluctuated rapidly and for a time steadily mounted. These changes in coal prices were at times abrupt. No utility could bring to bear any business sagacity to foretell or estimate for any definite period when these changes would occur. Purchases of coal under contracts running over long periods of time for delivery could not usually be made. The coal clause rates served during the period a very useful purpose, and probably no other method could have been adopted more equitably designed for the utility companies and the consumers. But it was held that, the emergency having passed, there was no longer a reason for the retention of these clauses and that they should, therefore, be superseded by more definite rates carried into the tariff schedule and calculated to produce the required revenue.

The Vermont Commission has taken the position that the rates of a public service corporation in force at any particular time ought to be certain. The Commission declared that the schedule on file for public information should contain sufficient data to enable a customer into whose manufactured goods the company's product enters as an element of cost to compute with reasonable accuracy the expense of that element; that a schedule of rates which left to the company power to increase or diminish its charges according to some variable circumstances in its discretion, did not furnish to the customer that information which the law contemplates; and that rates established by such a method are not fixed by law but by the will of the company.

And in disapproving coal and oil clauses in gas rate schedules providing for automatic increase or decrease in rates for gas as the cost of coal and oil varied, the former New York Commission, Second District, through Commissioner Irving said: "Underlying the rate provisions of the Public Service Commissions Law is the principle not only that rates shall be reasonable but that they shall be published, and to such a degree stable, that the consumer may know in advance the price to him of the service to be rendered. This may to some extent be accomplished by the variable rate, that is to say, the period of stability may be such as to give the consumer the price for one, two, and three months in advance by basing, for example, the rate for any quarter upon the experience of the corporation for the preceding quarter. This hardly accomplishes the purpose of accommodating rates to rapidly fluctuating costs. By the method suggested, the rate for a given quarter would be based, not

on the actual costs for that quarter, but on the costs for the preceding quarter. In the long run the price paid by the consumer would be the average based upon costs in the different periods, but to accomplish this result no such device as that proposed is necessary.

In bringing about changes in rates, the companies most frequently take the initiative in abnormal times, and the rate payers in normal times. The method of filing new schedules to become effective by operation of law, unless the Commission otherwise orders, is usually adopted by the companies where this is permitted, although many utilities petition for authority to raise rates. In many cases the Commissions have taken the initiative in determining whether existing rates are reasonable. The London or Boston sliding scale has not made any headway in this country, and, while the automatic device of attaching fuel and labor riders to rate schedules was extensively adopted as a temporary expedient to save the companies from losses due to delays in rate hearings during a period of violent price fluctuations, it soon began to be abandoned upon a return to normal operating conditions.

Commissions and the Federal Courts

The following, quoted from an opinion of the Louisiana Public Service Commission in a telephone rate case (Cumberland Telephone & Telegraph Co., ex parte in re rate readjustments, No. 40, Railroad Commission of Louisiana Docket No. 3052) will be of interest in connection with the attitude of the Louisiana Commission toward legislation of the class contemplated in the Bacharach Bill, House Resolution 10212. (EDITOR'S NOTE.)

DURING the hearing which this Commission held in the City of New Orleans, beginning May 2, 1922, one of the counsel representing the defendants, saw fit to make a remark to which this Commission would take no notice but for the fact that the public press has given it wide circulation. That remark was that the petitioner had improperly brought into effect the injunctive process of the Federal tribunals and that such tribunals were the paradise of the corporations. When such a comment was made, the Commission took occasion to then and there inform the counsellor and those present that the Commission did not care for such an argument; that the process of the federal tribunals was a matter of which this Commission could make no objection, and made none. The Federal tribunals have often been resorted to for the purpose of enforcing orders of this Commission and for the purpose of restraining them, and we might here say that a larger per cent of this Commission's orders have been affirmed in the Federal tribunals than in our own Courts of the State of Louisiana. The records on this matter are quite convincing."

Gas Company's Co-operation with College Students

R. C. CONGDON, Secretary, Atlanta Gas Light Co., Atlanta, Georgia.

Mr. Congdon here gives an inclusive idea of what his company is doing to develop young men for the gas industry in connection with the Georgia School of Technology's cooperative educational plan. It is an excellent idea and one which merits the attention of the whole industry.—(EDITOR'S NOTE.)

SINCE 1912, the Georgia School of Technology has offered two courses in Engineering, the standard four year theoretical course as given by other engineering colleges and a five year co-operative course in which the student spends, alternately, four weeks in college and four weeks in practical engineering work in the shops of Atlanta and the cities within a radius of about one hundred miles.

The Co-operative Department offers two courses, one in General Engineering (combining Electrical and Mechanical) which leads to the degree of B. S. in Engineering, Co-operative Plan, and one in Textile Engineering which leads to the degree of B. S. in Textile Engineering, Co-operative Plan.

The course in General Engineering combines all the fundamental principles in Electrical and Mechanical Engineering, omitting a few purely specialized subjects and offering instead Modern Production Methods, Accounting, Commercial Law, Corporation Finances, etc. Should a student desire to specialize in any branch of Electrical or Mechanical Engineering, he would be placed during the last two or three years in school in such an industry as would give him practical knowledge of the specialty he desires to follow. This course is planned to equip the student for a position in either the designing, production, sales, or executive department of industry.

In the Co-operative Plan the students are divided into two Groups, or Sections, Section 1 and 2. Section 1 reports to college for 4 weeks during which time it is given the regular class room work. At the same time Section 2 is working in the various shops in and about Atlanta. At the end of this four-week period the sections change places, Section 1 going to work in the shops, while Section 2 takes its place in college. At the end of the second 4 weeks the sections again reverse positions and thus the class and shop work is carried on throughout the year. The student always returns to the same job until the shop officials and the college officials advance him to a higher grade of work. In this manner the student receives training in all branches of work in the factory.

This course extends for the full twelve months of the year, the student being given a vacation, on college time, of two weeks in the summer and one week during the Christmas Holidays.

The manufacturers find that they get a boy who takes an interest in his work while the boy gets all the advantages of "rubbing elbows" with the working man, seeing and doing things under actual manufacturing conditions so that when he graduates from college, he can

at once take up the duties of his chosen engineering profession without first serving two years apprenticeship course as is required by many leading manufacturers of the country.

A corroboration, unintentional and therefore more valuable, of the value of the Co-operative five year plan is gained from a study of the positions held by the graduates of the four year plan and the Co-operative five year plan. It is a well known fact that less than 75 per cent of the engineering graduates from the four year plan ever follow their chosen and studied profession, while records of the graduates of the Co-operative five year plan since its inauguration at Cincinnati University in 1906 show that over 95 per cent are following engineering work.

The following is a schedule showing the names of the cooperative students and the work they do.

Khoury 7:30 A. M. to 5:30 P. M.
(Alternating with England)

Calorimeter determinations of city gas at City Hall and Electric and Gas Building at 9 A. M., 1 P. M., and 5 P. M., every day. At City Hall meets and works concurrently with city representatives.

Gas analysis daily including preparation of re-agents.

Every second day makes titration tests of ammonia liquor from all tanks and wells. Assists in evaporation tests of ammonia liquor.

Assists in purifier tests.

Assists in coal and coke analysis, also in tar analysis, including determination of viscosity of and free carbon in tar. Makes occasional fractioning tests of gas oil.

Assists in sampling and analysis of producer and flue gases. Assists Chemist in special investigations when made.

England 7.30 a. m. to 5.30 p. m.
(Alternating with Khoury)
(Same as Khoury)

Milner 7.00 a. m. to 5.00 p. m.
(Alternating with Caldwell)

Calorimeter tests every hour of coal gas, water gas, mixed gas, and city gas, and keeping charts of results in office and works.

Makes tests for ammonia and napthalene in gas.

Reads station meters every hour and places readings on reports.

Figures out water gas results every 2 hours.

Caldwell 7.00 a. m. to 5.00 p. m.
(Alternating with Milner)
(Same as Milner)

Bell 3.00 p. m. to 12 p. m.
(Alternating with Thornton)

Calorimeter tests every hour of coal gas, water gas, mixed gas, and city gas, keeping charts of results in office and works. Calorimeter tests of city gas at City Hall and Electric and Gas Building at 8 p. m.

Reading of station meters every hour and placing results on reports.

Figures out water gas results every two hours.

Thornton 3.00 p. m. to 12.00 p. m.
(Alternating with Bell)
(Same as Bell)

Bullock 7.30 a. m. to 5.30 p. m.
(Alternating with Aycock)

Assists Mr. Carswell in obtaining data on benches, temperature determinations of retorts and analyses of producer and flue gases.

Makes Tutwiler Tests of purifiers.

Aycock 7.30 a. m. to 5.30 p. m.
(Alternating with Bullock)
(Same as Bullock)

Wishing to have an expression from the various students I asked each one to write me a letter outlining what he thought of the co-operative plan and how he liked gas engineering work. I quote a few sentences from these letters.

Aycock

"The Gas Plant is one of the ideal places for a co-operative student. There is a larger variety of engineering experience in connection with it than most other manufactories, for instance, note the following:—boilers and equipment, engines, turbines, pumps (electrical and and steam,) handling air and gases, meters, pipe fitting, laboratory tests and analyses, experience in making out reports, etc."

England

"The Co-ops in connection with the gas works have a splendid chance for unlimited opportunities. The work is not merely localized; it is a national industry. There are gas works in all modern cities, not only in the United States; they are established in every civilized country of the world and all combined comprise one grand industry. In modern gas works, such as the Atlanta Gas Works, I personally find the work very interesting. It is general, especially in the fields of gas, chemical, electrical and mechanical engineering."

Milner

"In regard to my work at the Georgia School of Technology and with the Georgia Railway & Power Company I wish to state that in my two years as a student and employee I have realized the advantages of the co-operaative plan of engineering more than I had expected to, and believe that the practical experience I am receiving at the plant of the Atlanta Gas Light Company is better than that offered by any other plant employing co-operative students.

"At the time of beginning my course I knew nothing of gas works nor of actual conditions of production. The work offered students at the Atlanta Gas Plant gives a thorough understanding of gas production by use of the most modern machinery.

"This work is not confined to the production of gas alone but the different departments give an opportunity for electrical, mechanical, and chemical experience; the theory of which is studied in the class room. For this work the student receives money from the company based on a regular rate of wage. Although this financial benefit is of secondary importance it is helping boys, as myself, to obtain a college education which otherwise might have been impossible.

"I believe that gas engineering presents a much wider field than has been realized by many students of engineering and that for developing such, a more thorough understanding of the profession is needed.

"The co-operative course gives students the advantage of growing up with an industry. I believe that such an understanding can be reached through students growing up with the gas industry; and if gas works near other schools where co-operative plan of engineering is offered, would make their work as attractive for students as has the Atlanta Gas Light Company I see no reason why a much broader field could not be developed in the future."

Bell

"There is a good chance for each co-op working at the gas plant to get lots of experience in gas engineering for our work carries us through every phase of gas production.

"I like to work at the gas plant and find the work interesting and instructive, and as time passes I realize more and more the vastness of the field of gas engineering although I think electrical and mechanical engineering offers more opportunities."

Caldwell

"I have been working for the Georgia Railway & Power Company for the past three years under the Co-operative System. During this time I have worked in the Sales Department, Meter Department, Repair Department (Fulton County Plant) and the Gas Department

"When the time came for me to be transferred from the Repair Department, I asked to be and was transferred to the gas plant The gas plant, I thought would be a good place to spend a short time as I knew nothing of the making of gas. I have been at the gas plant for a year and I find the work more interesting than I anticipated Of the four departments of the Georgia Railway & Power Company, that I have worked in, I find the Gas Department the best. It is best because there is a greater variety of work and the work is interesting.

"Since I have been working with the gas company I have been thinking of going into the gas busineses after finishing school. The work is attractive and the opportunities are good, because there are a very few, if any, schools that offer a course in Gas Engineering."

Khoury

"It affords me great pleasure to have an opportunity to express my opinion of the Co-operaative Course on Gas Engineering. The co-operative plan is without doubt the greatest method of teaching any branch of engineering to the embryo engineer. It affords not only the theory which is obtained in school but the practical application which one receives while at work. The work in gas engineering I have found to be the most interesting of any engineering work I have yet performed. The daily diversity of problems gives an increased impetus of engineering interest. One is spurred on to do more work as the new problems arise. The work is not a daily repetition and therefore not monotonous.

"I have never considered work with the gas company as only means of obtaining my collegiate expenses. Of course the money helps to pay my expenses but I value the training and additional engineering knowledge far more than monetary remuneration. The knowledge of working with men and getting that factor of human engineering which can never be bought with money nor obtained in a class room. Again the young engineer is taught confidence in himself which is invaluable to himself and his employer.

"I have found in my three years of gas engineering work that the field of gas and by-product manufacture is the most interesting and instructive of any branch of engineering work I have ever attempted. The scientific accuracy and knowledge required is greater than in many of the other engineering fields. To satisfactorily become a gas engineer one has to have a knowledge of Mechanical, Electrical, Civil and Chemical Engineering. I know of no other industrial work that includes in part all of the above requirements. All this cannot be obtained by one in school but by hard study on the job during the work periods. I consider my work just as much part of my schooling as my regular school periods.

"I heartily recommend the Co-operative Course without reservation to all novices or engineers."

The rates of pay are as follows:—

	1st Term per hr.	2nd Term per hr.
Work 1st year	30c	32c
" 2nd "	34c	36c
" 3rd "	38c	40c
" 4th "	42c	44c
" 5th "	46c	48c

The regular working hours are 9 hours per day and 50 hours per week, with straight time for overtime on holidays and Sundays when the services of the students are required.

We are very much pleased with this Co-operative Plan, which we believe benefits the students, the company, and the industry.

Pilot Lights for Circulating Heaters

One of our members has made a suggestion that ordinary circulating water heaters could be benefically equipped with a pilot light and that steps should be taken to have manufacturers so equip their heaters, with a general benefit to this type of heater.

It is the writer's opinion that there are two sides to this question and he is therefore presenting it to the industry for answers from all of those interested in this subject.

There is no doubt that the pilot light is always a convenience when it operates properly. There is, however, considerable doubt in the writer's mind as to the possibility of designing a perfectly safe and reliable pilot which will not be the possible source of trouble and even danger.

Answers are particularly requested from manufacturers of circulating water heaters and gas company representatives that have had considerable experience with these appliances.

Send answers to N. T. Sellman, Service Engineer, A. G. A.

University of Pennsylvania

Philadelphia

Towne Scientific School

June 1, 1922.

Mr. Griffin Gribbel,
1513 Race Street,
Philadephia.

My dear Mr. Gribbel:—

As the university year draws to a close, I take this occasion to express my great appreciation of your personal interest in securing the lecturers who participated in our course in gas manufacture and distribution. They all entered into the proposition with enthusiasm.

Aside from the direct benefit from the lectures, I feel that the major return to the members of the class was the direct contact which they had with men who are actively connected with the commercial and engineering activities of the gas business.

I want to thank you therefore for securing men who understood so well the student viewpoint.

With kindest personal regards, I am

Very truly yours,

(Signed) R. H. FERNALD.

We reprint the above letter as another indication of the activity in the educational movement. [EDITOR'S NOTE.]

Fire Prevention Reduces Costs and Aids Good Service

J. G. REESE, Consolidated Gas, Electric Light & Power Company, Baltimore, Maryland.

ALTHOUGH the insurance rating bodies have reduced rates of gas properties, it must not be thought that no further attention should be given to fire prevention and protection. In fact, it has been practically assured that if, within a few years, the loss ratio still decreases a further revision downward of rates will be effective. Therefore efforts should be made to prevent fire losses or reduce them to a minimum.

Prevention of fire should be viewed from another angle, however, that is, the maintenance of good service. A serious fire not only entails a physical loss, which may be compensated for by insurance, but it also interrupts service to the customer, with the consequent loss of good will, and profits for which no insurance can reimburse. It is quite true that one rarely hears of a gas plant burning, but statistics for the past five years, incomplete as they are, show that more than half a million dollars of gas property has been destroyed. This figure is certainly considerably below the actual loss, as only about 50% of the member companies furnished data to the Insurance Committee.

Fire prevention and protection may be readily divided into two general classifications, viz., good housekeeping and standard construction.

No good engineer would allow an installation of equipment that would prove to be a fire hazard, nor would manufacturers produce such an article. Where then is the root of the fire losses which have occurred? The answer, generally,

is lack of good housekeeping. The term, good housekeeping, includes that proper attention to cleanliness and order, which requires the watchful supervision of the plant superintendent.

A great fire hazard is present in what may seem to be trifles, accumulation of rubbish, loose paper, oily waste, unused lumber, packing material, such as straw, sawdust, and excelsior. Locker rooms are prolific fire breeders as the men frequently allow old papers, greasy or paint-covered clothing to accumulate in the lockers. Fires frequently occur due to spontaneous combustion, a carelessly thrown cigarette or match, or lighted tobacco in pipes left in clothing. A small fire originating in such places, especially at night, might greatly endanger the rest of the plant, and seriously cripple service. Another hazard is the storage of oils, and paints, and the use of waste and old rags which, thrown carelessly aside, frequently blaze up from spontaneous combustion. Careful regular inspections and cleaning out of the places where such hazards may occur is a necessity; metal cans should be provided liberally around the plant and the employees instructed to deposit all waste therein. The psychological effect of a clean plant on the minds of the men cannot be overlooked, nor its aid to accident prevention.

It is the intention of the Insurance Committee to publish in the Association Monthly from time to time a series of articles dealing with fire prevention and protection and later articles dealing with specific hazards and their remedies will be forthcoming. This Committee has in mind the problems of the smaller companies which are not in a position to have men trained in this work, in their employ. It is with a desire to aid such companies that these articles are published. If any problems of insurance or fire prevention arise, the Committee hopes the member companies will avail themselves of the opportunity to use the information which the Committee is able to command.

In order to obtain the lowest possible insurance rates on gas properties, it is essential that the standard requirements of the underwriters be followed in construction. The National Board of Fire Underwriters publish a manual known as the "Building Code", which sets forth their standards. This code has been compiled by a committee comprised of the foremost architects, engineers and underwriters in the country, and the knowledge and experience of these men should receive deep consideration. When they have decided that a certain form of construction is necessary, it is based upon experience gained from the study of fire, and fire prevention. Therefore in order to obtain the best results it is desirable when new construction or alterations are to be undertaken, that the standards of the Building Code be followed. The Underwriters in each locality will gladly advise on plans submitted to them. It will be of great benefit to member companies to do this, and even in the case of existing structures the broker should be requested to furnish the details of the rate. Frequently by the addition of a fire door or a slight alteration in the existing structure a substantial saving in premium may be obtained. As has been pointed out before, the broker is not apt to give much thought to reduction in rates unless pushed by the assured, or by competitors.

As public service bodies it behooves the gas companies to lend their active aid to all movements inuring to the public good.

In this connection the member companies are earnestly urged to enlist and identify themselves with the nation-wide fire prevention work which is stressed, particularly in October. The President of the United States usually, by proclamation, names October 9th as"Fire Prevention Day." Throughout the country attention is drawn to the work of prevention by various campaigns against the fire waste. With a loss of about $500,000,000 last year, it is quite apparent that the easy-going American citizen should be awakened to this reckless waste of the country's resources. As this fire toll increases so must rates go higher. Therefore again, the active aid of the companies is enlisted in any public campaign undertaken during fire prevention week. Not only will it be of benefit to the plant of the company, as a result of the attention drawn to the need of fire prevention, but it will gain public good will. Use your display space in windows to set forth some of the results of the fire waste and the remedy for carelessness; display prominently posters which the local committee may distribute in windows, around the plant, and on wagons or trucks. Gas merchandise may be used in a number of ways, as a window display, to teach fire prevention. One of the member companies used such a window display in a campaign last year, and received requests from the National Board of Underwriters for photographs to be used as a model window in future campaigns.

It must be remembered that the insurance companies are nothing more than collectors and distributors of the tax imposed by fire waste. If the amount collected, as premiums, from each individual is to be less than formerly then it is the duty of the individual to strive to reduce the amount of the distribution fire losses.

On Tearing Down Houses

Property is the fruit of labor; property is desirable; is a positive good in the world. That some should be rich shows that others may become rich and hence is just encouragement to industry enterprise. Let not him who is homeless pull down the house of another, but let him work diligently and build one for himself, thus by example assuring that his own shall be safe from violence when built.

—Abraham Lincoln in reply to a letter from the Workmen's Association of New York.

Figures and What They Mean

The following article is lecture No. 14 in a series prepared by executives of the Oklahoma Gas and Electric Company and used in a series of class meetings and conferences for all members of the Oklahoma City Division. The first lecture was printed in our July 1922 issue.—(EDITOR'S NOTE.)

THIS is a subject that may be discussed from many different angles, but we will consider it from the Public Utility's standpoint, and deal briefly with their meaning to the different departments of our own organization.

Let us first take up the meaning of the word "figure," which we find to be a "character used to represent a number," just as letters are characters used to represent a sound.

Their use, for all practical purposes, is confined to the characters known as Arabic numbers, which are 1, 2, 3, 4, 5, 6, 7, 8, 9, 0,—by combination of which any possible number may be represented. These characters, or a greater part of them, were found among the heiroglyphical inscriptions of Egypt, and their use was taken up by the inhabitants of India, who transmitted them through the Persians to the Arabs.

It was the Moors, an Arabian tribe, who introduced them into Europe when they became masters of Spain in the 10th century. In the 11th century, Gerbert, a Benedictine Monk, who afterwards ascended the Papal Throne under the designation of Sylvester II, traveled into Spain for several years, studied the Sciences there as cultivated by the Moors. Among other things he gained a knowledge of the Arabic numerals and their mode of calculation by arithmetic.

This knowledge was immediately disclosed to the Christian world, among whom he was accused, on account of his learning, of an alliance with evil spirits. At about this time the Crusaders opened up trade between Europe and the East, and this knowledge was extended through this channel, also.

We find no trace of the Arabic numerals being used in England until the 13th or 14th century. This is found in the works of John of Halifax. Their use, however, was not generally adopted in England until the 15th century, and settled into their present form with the invention of printing.

Figures were first mechanically manipulated in the year 1650. This device was a consecutive number machine, and no doubt from this idea, all our mechanical calculating devices started.

The Science which treats of numbers, and the art of computing by them is called arithmetic. There are four operations used in computing numbers, addition, subtraction, multiplication and division and only two basic principles involved—addition and subtraction by the plus and minus sign respectively and called the principal signs of arithmetic.

Multiplication is a short process of addition and its proof of accuracy, may be ascertained by the application of division. Division is a short process of subtraction and its proof of accuracy may be obtained by the application of multiplication. Addition may be proven by subtraction and subtraction proven by

addition. From the above operations we learn the relation of numbers, and the real science of arithmetic is knowing which operation to apply in solving the problems that confront us.

"What They Mean"

We have dealt with the history and definition of figures and will now take up their actual meaning to us. Figures alone are wholly void and without meaning, but when grouped under proper headings, or properly explained in other ways, they become a very important factor in our daily routine, and are as indispensable as the alphabet.

We frequently make some tedious calculation to which we later wish to refer and find that because we have failed to make the proper explanations, the figures are of no value, and our previous efforts are lost.

Let us be impressed with the importance, therefore, of properly explaining all calculations passing into the hands of another, or to which we wish, later to refer. What would our ledgers amount to without captions for accounts, or our operating reports without the proper explanations?

Figures are exponents of truth, but the veracity of numbers lies wholly with the person compiling them. It, therefore, behooves each of us to pay particular attention to the accuracy of our calculations and the proper headings, prefixes and explanations, of any data we submit. We should ever bear in mind that our personal advancement depends upon the value of our service to our company, and this is measured, in no small way, by the dependence that can be placed in our work. Accurate information from all departments is absolutely necessary to the successful conduct of our business.

By figures the chief engineer determines the amount of energy generated and its cost to produce, the storekeeper determines the value of his stock, the superintendents the cost of construction, maintenance and operation. The meter reader records the reading of a consumer's meter and from them are determined the amount of energy used, and its value. We now begin the grouping of figures, one set known as income, and another known as expenses, and I call your attention to the result of an error in the details of the former group. We will suppose the meter reader over-reads a consumer's meter, to the extent of $1.00 in value. This error will likely not be discovered until the consumer gets his bill, and enters complaint.

By this time the earning of his account has already been reported to the auditing department and they have set up an erroneous figure which they must carry throughout the month. This, however, is the least damage done. This customer has had his confidence in our ability to properly handle his account shaken, even though prompt reparation is made. Accuracy and courtesy go hand in hand in our dealing with the public and neither must at any time be sacrificed for speed. We are servants of the Public, and as such should ever strive to give service, but never have we given service until the customer with whom we are dealing has been given that for which he may rightfully ask from us and if it is information, the information must be accurate.

An error in expenses affects the company and not the public whereas an error in income affects both. Future plans of our company are based largely on statistics of past operations, and while our regular reports are very complete in the

detail of all phases, it is sometimes necessary that additional information be given.

Great care should be given to the preparation of such data as an error on your part may be so misleading as to cause someone to make a misjudgment in some vital question, or perhaps a needless expenditure of capital.

SOUNDS REASONABLE

Courtesy of the State Gazette, Trenton, N. J.

What a New Customer Thinks the First Day

By H. A. LEMMON, Stone and Webster, Boston, Mass.

I want to paint a little picture of one of the very fundamental sources of trouble in the relationship between the central-station company and the people. It is the little matter of the first impression out of which grows the opinion, attitude and influence, which every householder maintains either to the benefit or the disadvantage of the public utility company. Here is the picture. Bill Jones and his family and their small possessions arrived in their present home one Saturday morning, and with the unpacking and lugging of goods into the house it was early afternoon before any of the family chanced to think of electric lights and gas. Two or three of the cords had lamps swinging at their ends, but neither the snapping of the key nor the turning of the cocks produced any results. Vaguely Bill knew that for some reason these services had been disconnected and so notwithstanding his anxiety to get the beds up and the range working he saw no way out of it but to clean up and walk over to a neighbor's to telephone to the gas and electric company.

Mrs. Jones had reminded him that the next day was Sunday and the following day was a holiday, giving him a list of groceries which she must have before evening. The voice explained that his order was in too late to go out on one of the regular deliveries, but that it would certainly be sent out specially and would surely arrive in the evening. It did.

Then he called up the gas and electric company, apologized for forgetting to order his service reconnected before and rather awkwardly explained the situation. The voice at the other end broke in impatiently: "You'll have to come to the office and sign up." Bill ventured to suggest that he could come in Mon-

day or Tuesday. "No", said the voice; "you'll have to come into the office and sign up if you want lights or gas", and the tone indicated that the conversation was ended.

Bill "cussed" a bit, but he hurriedly went home and Mrs. Jones finally found his other clothes in the big box. Bill donned them and trudged off for the office of the public service corporation. It was only a twenty minute walk, and at a quarter of three he entered the portals of a big establishment which he thought must be a bank.

There was a mahogany counter surmounted by curlicues and rods in polished brass, punctuated here and there with inhospitable portholes. He glanced over these but none of the eyes he met staring out from them conveyed an invitation, and so he fell into the line which he observed lock-stepping its way to the one which appeared the most popular. After ten minutes which seemed to Bill and hour as he thought of the things he must accomplish that night, his turn at the window came. "I want to get lights and gas connected at 978 Fairfield," began Bill, when he was interrupted by the cage inmate with a terse "Contract window!" and a glance of dismissal which tried to look past and around Bill to the next person. Bill didn't quite catch the significance of the remark nor the incurve glance and so he started to repeat. "Contract! I said," came the interruption again, this time quite conclusively. Bill grasped the idea that he was wrong for some reason or other and stepped aside to think it over.

One of the lock-step gentlemen took pity on him and said, "He means you are to go to the window marked "Contracts.' You only pay bills at this window." Bill stumbled a bit both mentally and physically to the designated porthole, and notwithstanding the impersonal glare which met him told the story of his requirements.

The proposed transaction seemed to be quite an important one to Bill, but was received in silence and was only interrupted by the clerk thrusting a card at him with the command, "Sign here." Bill started to read the very fine print he was ordered to sign, but this proceeding was so evidently out of order that finally he hastily appended his signature. Could he have the service that afternoon? "Information" was the only word shot back at him. He had learned much by this time, however, and he looked about and found a place so designated. He told his story for the third time here in part, and the clerk wanted to know if he had signed up an application card. Bill didn't know. He had signed something at another window. With a bored and resentful air the clerk walked over and presently came back with the card, which in turn he handed to a boy who disappeared with it into the mysteries concealed by a partition.

Bill didn't know that back there they were going over the book of bad bills to see if his name appeared there. In time the card was returned. The information clerk scrawled his initials upon it and began to fill out another blank.

"Ten Dollars."

"What?" said Bill.

"Ten dollars—a deposit."

Bill didn't have the ten dollars with him; he would have to walk home and get it. Could he bring it in or send it Monday? He could not. The deposit must be made before he could receive service. Bill trudged home, got the ten dollars and trudged back. He wasn't

tired. There were surging up within him emotions which anaesthetized any feeling of weariness which he might otherwise have felt.

There was no delay in getting to the right window this time. Bill was learning the ropes of that mysterious place of business. He paid the money, got a receipt and the clerk finished filling out the second blank. Rather timidly this time, Bill started the tale of the inconvenience which would fall upon his little family if he could not have service that night. Bill had never walked into a bank and asked the cashier to give him a million dollars, but he knew exactly what the sensation would be from the look he received at that desk.

"The wagons went out on their last trip two hours ago. We cannot connect any more tonight," was the answer. Bill ventured the opinion that the morrow was Sunday and the next day was another holiday, but apparently this statement had no element of news in it, for it met with nothing but a yawn and a glance at the clock. The incident was closed.

I relate this story because I have seen it enacted not once but many times. All or part of it can happen with many more companies than any of us want to confess. From the incidents of that first day's contact Bill Jones constructed the entire organization of the lighting company in his mind and so fixed his present and future relationship to it. This point of contact might have been through the collector, the meter reader or any other so-called minor representative of the company, and the result would have been the same. Yet Bill is the chap who decides the destiny of our franchise amendments, and our obligations, and our applications for increased rates, and our dividends.

Mr. Jones' grocery bill is very nearly $40.00 per month these days as against $25.00 six years ago. If his grocer prospers until he owns his own building and has a stock worth $50,000 Bill doesn't care and in fact is rather proud of it. He likes to associate himself with successful people and institutions. He mildly resents the increased price of groceries, but in the back of his head, is the fact that, while the cost of living has risen, his wages or salary has also advanced.

But if the lighting company to which Bill Jones pays an average of $2.20 per month proposes to increase that amount by twenty cents, Mr. Jones is indignant, enraged, and is not content until he has invoked all the powers and resources of his citizenship to combat the "outrage." Why? Lack of understanding that corporations are subject to the same immutable economic laws that govern the grocery business. He rather imagines that the directors get together in the back room about once in so often and by incantation and other mysterious hocus-pocus create money out of the air, as it were. It might make a better citizen, customer and neighbor of Bill if the mechanism of the company should be taken apart and the pieces spread out in the open for him to handle and understand. Assuredly it would be better for the lighting company.

Typical street-car fender advertisement used by The Laclede Gas Light Company of St. Louis in connection with Gas Range Month.

Ignorance never settled a question.

—Disraeli

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Exhibition—JOHN S. DEHART, JR., Newark, N. J.
Nominating—GEORGE D. ROPER, Rockford, Ill.
Division of Accessories Manufacturers—J. M. SHERWOOD, New York, N. Y.
Division of Apparatus and Works Manufacturers—D. J. COLLINS, Philadelphia, Pa.
Division of Gas Range Manufacturers—WM. M. CRANE, New York, N. Y.
Division of Heating Appliance Manufacturers—K. S. CLOW, Chicago, Ill.
Division of Industrial Appliance Manufacturers—WM. B. KOPPER, Brooklyn, N. Y.
Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Gloucester, N. J.
Division of Meter Manufacturers—DONALD McDONALD, New York, N. Y.
Division of Office Labor Saving Devices Manufacturers—E. J. FERRIS, New York, N. Y.
Division of Water Heater Manufacturers—A. P. BRILL, Pittsburgh, Pa.
Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

A Historical Exhibit at the Convention

THE Steel Pier at Atlantic City offers ideal space directly on the boardwalk for a historical exhibit of the gas industry from its birth to the present day.

The exhibition committee is going to take advantage of this opportunity and plan to show:

1. A working model of a gas works with miniature appliances connected to the lines and in operation.

2. A historical exhibit of various types of gas appliances or such apparatus and material as will best convey an idea of the progress which has been made in the development of the industry. They will be suitably labeled to give their history and will be installed against appropriate backgrounds conforming to the period of their use.

A number of contributions to this display have already been made. But if you have or know of the whereabouts of any material of such historical value (antique appliances, meters, mains, street lamps, etc.) Association headquarters will appreciate your advising them so that they may arrange for their loan.

Have You Reserved Your Exhibition Space?

OUR Exhibition Prospectus was mailed to our members only two months ago and in response we have already received applications for eighty per cent of the available space.

This indicates the possibility of meeting with an oversubscription and to insure against being omitted from the representative gathering of exhibitors at this year's show, it is earnestly urged that those who have not already done so, fill out the application for space and return it promptly to headquarters.

The following companies have made their applications to date:

1922 EXHIBITORS

A-B Stove Company, Battle Creek, Mich.

Acme Brass Works, Detroit, Mich.

American Meter Co., New York, N. Y.

American Radiator Co., Chicago, Ill.

American Range & Foundry Co., Minneapolis, Minn.

Armstrong Cork & Insulation Co., Pittsburgh, Pa.

Atlantic Tubing Co., Providence, R. I.

The Baltimore Gas Appliance & Manufacturing Co., Baltimore, Md.

The Bartlett Hayward Co., Baltimore, Md.

Bastian-Morley Co., LaPorte, Ind.

R. H. Beaumont Co., Philadelphia, Pa.

The G. S. Blodgett Co., Burlington, Vt.

Bureau of Mines, Pittsburgh, Pa.

Bureau of Standards, Washington, D. C.

Chicago Vitreous Enamel Product Co., Cicero, Ill.

George M. Clark & Co. Div. American Stove Co., Chicago, Ill.

Cleveland Gas Meter Co., Cleveland, O.

The Cleveland Heater Co., Cleveland, O.

James B. Clow & Sons, Chicago, Ill.

Connelly Iron Sponge & Governor Co., New York, N. Y.

Wm. M. Crane Co., New York, N. Y.

Cruse-Kemper Co., Ambler, Pa.

The Cutler Hammer Mfg. Co., Milwaukee, Wis.

M. T. Davidson Co., New York, N. Y.

Detroit Stove Works, Detroit, Mich.

S. R. Dresser Mfg. Co., Bradford, Pa.

Equitable Meter Co., Pittsburgh, Pa.

Eriez Stove & Mfg. Co., Erie, Pa.

The Estate Stove Co., Hamilton, O.

The Foxboro Company, Inc., Foxboro, Mass.

The Gas Machinery Co., Trenton, N. J.

Gas Purifying Materials Co., Long Island City, N. Y.

General Gas Appliance Co., New York, N. Y.

General Gas Light Co., New York, N. Y.

The J. H. Grayson Manufacturing Co., Athens, O.

Hays Manufacturing Co., Erie, Pa.

The Hoffman Heater Co., Lorain, O.

Humphrey Company Div. Ruud Manufacturing Co., Kalamazoo, Mich.

The Improved Appliance Co., Brooklyn, N. Y.

Isbell-Porter Co., Newark, N. J.

Johns-Manville, Inc., New York, N.Y.

Kalamazoo Loose Leaf Binder Co., Kalamazoo, Mich.

The Kompak Company, New Brunswick, N. J.

The Koppers Co., Pittsburgh, Pa.

Lambert Meter Co., Brooklyn, N. Y.

The Lattimer Stevens Co., Columbus, O.

The Lovekin Water Heater Co., Philadelphia, Pa.

D. McDonald & Co., Albany, N. Y.

Metcalfe-Shaw Corp., New York, N. Y.

The Michigan Stove Co., Detroit, Mich.

Milwaukee Gas Specialty Co., Milwaukee, Wis.

Mine Safety Appliances Co., Pittsburgh, Pa.

National Stove Co. Div. American Stove Co., Lorain, O.

National Tube Co., Pittsburgh, Pa.

New Process Stove Co. Div. American Stove Co., Cleveland, O.

The "1900" Washer Co., Binghamton, N. Y.

The Peninsular Stove Co., Detroit, Mich.

Pittsburgh Meter Co., Pittsburgh, Pa.

Pittsburgh Water Heater Co., Pittsburgh, Pa.

Quick Meal Stove Co. Div. American Stove Co., St. Louis, Mo.

Quigley Furnace Specialties Co., New York, N. Y.

Rathbone, Sard & Co., Aurora, Ill.

Reliable Stove Co., Div. American Stove Co., Cleveland, O.

Remington Typewriter Co. Inc., New York, N. Y.

Riter Conley Co., Pittsburgh, Pa.

The Roberts Brass Mfg. Co., Detroit, Mich.

Roberts & Mander Stove Co., Philadelphia, Pa.

Robertshaw Manufacturing Co., Youngwood, Pa.

George D. Roper Corp., Rockford, Ill.

Ruud Manufacturing Co., Pittsburgh, Pa.

B. Ryan Company, New York, N. Y.

The Safety Gas Lighter Co., Lynn, Mass.

The Sands Manufacturing Co., Cleveland, O.

The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.

Scott Gas Appliance Co. Inc., Washington, D. C.

The S. B. Sexton Stove & Manufacturing Co., Baltimore, Md.

J. B. Slattery & Bro. Inc., Brooklyn, N. Y.

Sprague Meter Co., Bridgeport, Conn.

Strause Gas Iron Co., Philadelphia, Pa.

Superior Meter Co., Brooklyn, N. Y.

The Tappan Stove Co., Mansfield, O.

Taylor Instrument Cos., Rochester, N. Y.

Union Stove Works, New York, N. Y.

The U. G. I. Contracting Co., Philadelphia, Pa.

Walker & Pratt Manufacturing Co., Boston, Mass.

Weir Stove Co., Taunton, Mass.

Welsbach Company, Gloucester, N. J.

West Gas Improvement Co. of America, New York, N. Y.

The Western Gas Construction Co., New York, N. Y.

Wheeling Corrugating Co., Wheeling, W. Va.

H. A. Wilson Co., Newark, N. J.

A. H. Wolff Gas Radiator Co., New York, N. Y.

WHEN you declare that a certain person will not co-operate with you make quite sure you do not mean that he will not agree with you.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—C. S. Bagg, Montreal Light, Heat & Power Co., Montreal, Que.
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto.
Conv., Hamilton, Ontario, Aug. 24-25, 1922.

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21 1919
Pres.—E. H. Rosenquest, Bronx Gas & Electric Co., Bronx, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., Lake Placid, N. Y., Oct. 5-6, 1922.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—R. S. Wallace, Central Illinois Light Co., Peoria, Ill.
Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1923.

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—F. B. Tracy, Central Indiana Gas Co., Muncie, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1923.

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—H. B. Maynard, Citizens Gas & Electric Co., Waterloo, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1923.

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—J. A. Brown, Hodenpyl, Hardy & Co., Jackson, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., Detroit, Mich., September 13th, 14th, 15th, 16th, 1922.

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—H. Spoehrer, Union Elec. Lt. & Pr. Co., St. Louis, Mo.
Sec.-Tr.—P. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1923.

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.—V. E. Bird, Connecticut Power Co., New London, Conn.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1923.

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
Gov.—F. A. Woodhead, Arlington Gas Light Co., Arlington, Mass.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1923.

New Jersey Gas Association

Date of Affiliation—April 25, 1919
Pres.—Jacob B. Jones, Bridgeton Gas Light Co., Bridgeton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J. Long Branch, N. J.
Conv., 1923.

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—Henry Bostwick, Pacific Gas & Electric Co., San Francisco, Cal.
Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
Conv., Santa Barbara, Cal., September, 19-22, 1922.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
Pres.—Luther Gaston, Lebanon Gas & Fuel Co., Lebanon, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1923.

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
Pres.—Frank L. Weisser, San Antonio Public Service Co., San Antonio, Texas.
Sec.-Tr.—S. J. Ballinger, San Antonio Public Service Co., San Antonio, Texas.
Conv., Hot Springs, Ark., Oct. 10-11-12, 1922.

Southern Gas Association

Date of Affiliation—May 20, 1919
Pres.—P. H. Gadsden, The United Gas Improvement Co., Philadelphia, Pa.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., 1923.

Wisconsin Utilities Association

Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
Exec.-Sec.J. N. Cadby, 445 Washington Bldg., Madison, Wis.
Conv., 1923.

COMMERCIAL SECTION

A. P. POST, Chairman — WILLIAM GOULD, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE—1922

At Large

Beal, A. R., Poughkeepsie, N. Y.
Caulet, F. F., Chicago, Ill.
Clark, J. C. D., Boston, Mass.
Crane, Wm. M., New York, N. Y.
Davies, J. E., Chicago, Ill.
Gould, Wm., Boston, Mass.
Karsener, G. M., New York, N. Y.
Long, H. J., New Brunswick, N. J.
MacSweeney, J. P., Rochester, N. Y.
Post, A. P., Philadelphia, Pa.
Reinach, H. B., New York, N. Y.
Rutledge, F. J., Philadelphia, Pa.
Schutt, H. S., Philadelphia, Pa.
Shattuck, J. D., Chester, Pa.
Smith, Dorsey R., Baltimore, Md.

Representing Affiliated Societies

Burke, E. J., Indianapolis, Ind. (Indiana)
Campbell, E. C., Benton Harbor, Mich. (Michigan)
Corl, Wiley F., Mexico, Mo. (Missouri)
Crafts, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
Cranshaw, J. Ward, Allentown, Pa. (Pennsylvania)
Doering, H. A., Mt. Vernon, N. Y. (Empire State)
Fisher, R. E., San Francisco, Cal. (Pacific Coast)
Flautt, J. J., New Orleans, La. (South Central)
Forney, Jas. A., Charlotte, N. C. (Southern)
Hanlan, J. P., Newark, N. J. (New Jersey)
Johnson, W. B., Toronto, Ont., Canada. (Canadian)
St. John, John, Madison, Wisc. (Wisconsin)
Taylor, W. H., Omaha, Nebr. (Iowa District)
Wallace, R. S., Peoria, Ill. (Illinois)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Contributions to Monthly—Representatives, Affiliated Societies

Cooperation with Architects and Plumbers—G. M. Karshner, New York, N. Y.

Industrial Sales—F. F. Caulet, Chicago, Ill.

Sales Stimulation—Wm. Gould, Boston, Mass.

Educational Pamphlets (Sub.)—J. P. Hanlan, Newark, N. J.

Merchandise Advertising (Sub.)—J. E. Davies, Chicago, Ill.

Program—Wm. Gould, Boston, Mass.

Your Vacation in October!

AFTER the trying summer months with their heat and discomforts, the early fall presents an ideal time for a real vacation. October, the pleasantest of all the Indian Summer months has many attractions all its own. No better time could be found than October.

So much for the seasonable considerations. Now the place. America has a resort known the world over—truly called "The Playground of the World"—Atlantic City. There in October in the quiet following the big mid-summer rush, Indian Summer can really be said to be at its best, for rest and recreation. Everything that could be wished for is at hand—the acme of hotel service—shops surpassed nowhere—the marvelous boardwalk with its fleets of rolling chairs—the sea air pure, soft, invigorating, straight from the mighty Atlantic. Atlantic City, indeed, is the place.

And the time? The week of October 23 to 27. Why? Because those are the dates of the Fourth Annual Convention and Exhibition of the American Gas Association. Think of what this means! Combining all the seasonable and restful attractions with the opportunity of meeting gas men from every section of the country under the most pleasant surroundings, is an unanswerable argument. And besides meeting these gas men, we have the business sessions and the exhibition.

The meeting this year promises to be the biggest in the history of the Association. The industry is gradually com-

ing into its own again and those who are far seeing enough to take advantage of the opportunity of attending will find a tone of optimism and enthusiasm reflected in this convention. The business sessions will cover subjects of vital interest in every branch of the industry and the papers to be presented promise to be decidedly worth while in every respect.

The exhibition on the Steel Pier, a place without parallel for such a show, will be more complete than ever with the latest word in appliances, apparatus and supplies and office labor saving devices. Most of the space has already been disposed of, evidencing the support and cooperation of the manufacturers to make this the biggest and best exhibition ever held.

These are but some of the arguments for your presence at the convention. Reduced fares have been granted by the various Passenger Associations so that your attendance will mean but a-fare-and-a-half for transportation. Details of this reduced rate with directions for securing it will be sent you later as well as the details of entertainment, papers, etc.

Even at this early date it would be well to make your reservations direct to the hotels. It is none too early now.

Keep the date in mind.

October 23 to 27.

A. G. A. Convention—Exhibition.

Sales Suggestions

The Sales Stimulation Committee recommends that there be no let down in selling effort during the summer months. Even though many people are away for vacation periods, the average person does not usually remain away for more than two weeks.

During July and August is the time to pave the way for the early Fall business. The suggestions contained on page 433 of the July issue of the American Gas Association MONTHLY are very timely and just as pertinent to carry out during August.

Remember yours is a 24-hour, 365-¼-day service.

Selling Gas Water Heaters by the Thousands

ONE of the larger gas companies recently started an intensive and systematic effort to place approximately 30,000 gas water heaters (tank and automatic types) on its lines. This company operates in a territory where there are 24 district offices.

At the outset the goal for the year was set at 22,000 tank heaters and 2,600 automatics, each district being assigned a definite quota. The following returns for these 24 districts for the month of June show an interesting comparison of results obtained during that month. The spirit of competition is very keen among the teams of the various districts and there is a continual urge for those in the lead to stay there and for others to catch up.

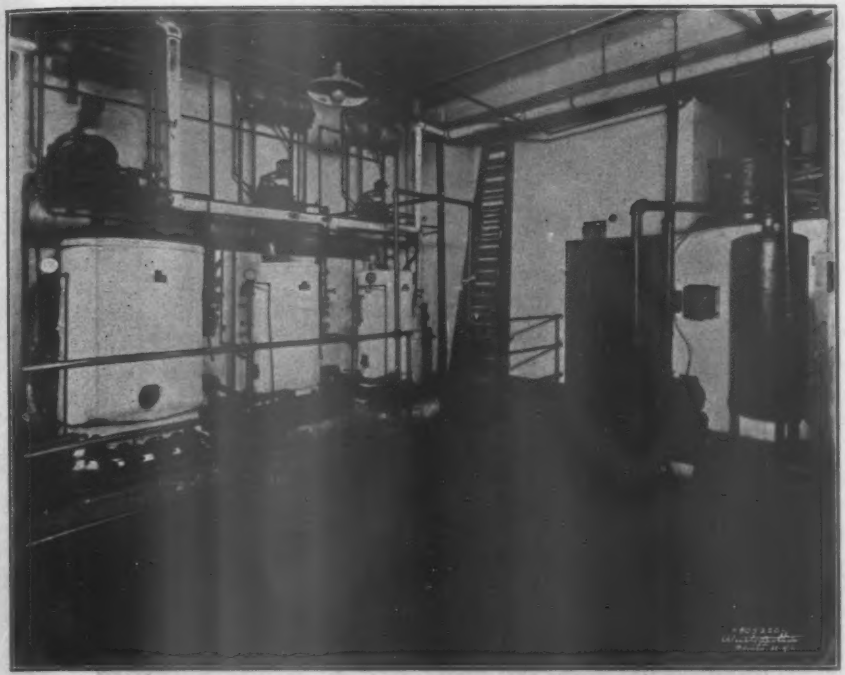
Standing of District Teams for June

Rank	Quota	Sales	% of Quota
1	300	406	135.3
2	450	602	133.7
3	200	228	114.
4	50	53	106.
5	800	822	102.7
6	200	180	90.
7	350	246	70.2
8	300	210	70.
9	25	18	70.
10	100	68	68.
11	100	58	58.
12	250	143	57.2
13	450	235	52.2
14	250	116	46.4
15	400	184	46.
16	150	58	38.6
17	100	38	38.
18	100	37	37.
19	150	55	36.6
20	25	9	36.
21	250	82	32.8
22	50	14	28.
23	25	5	20.
24	25	4	16.
	5100	3871	77.4

Total number of Tank Water Heaters Sold during June	3781
Total number of Automatic Water Heaters Sold during June	90
Total number of Tank & Automatic Water Heaters Sold during June	3871
Total number of Tank & Automatic Water Heaters Sold during May	3866
Total number of Tank & Automatic Water Heaters Sold during May & June	7737

Results such as the above will surely be an incentive to other companies. Are there any who have done as well or better; if so, the Association Headquarters would be interested in having the details.

A Good Water Heater Window



The Clothing Industry

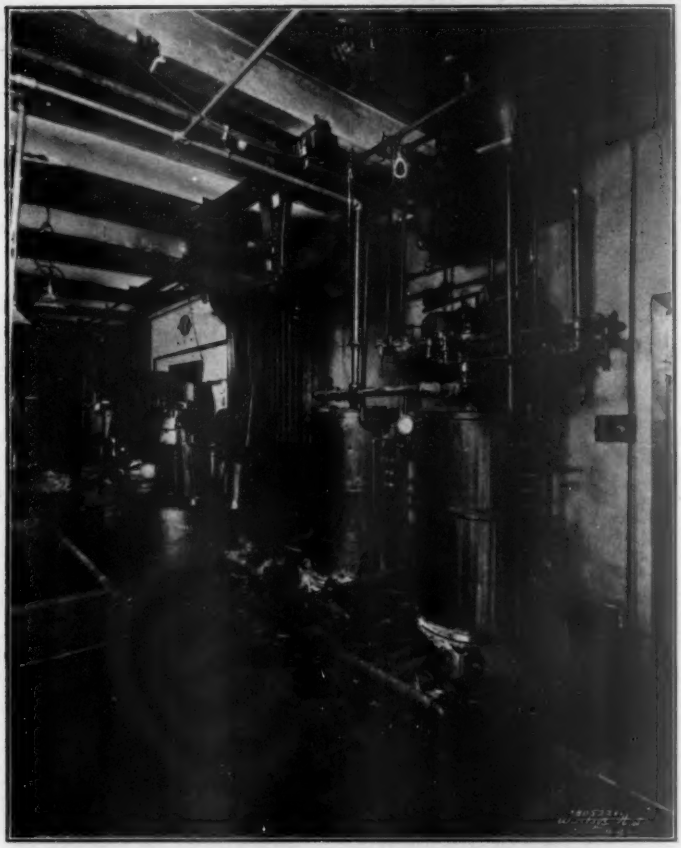
Gas Fired Boilers used to furnish Steam for 34 Hoffman Presses, 2 Hebdon Machines, and 1 Allen & Billmeyer Vacuum System.

One 25 Horse Power Boiler
Two 10 Horse Power Boilers

1200 Suits are pressed daily in this Plant.

Monthly gas consumption 300,000 cu. ft. or 3,600,000 cu. ft. annually.

Detailed information on file at A. G. A. Headquarters.



The Dyeing Industry

Two 10 Horse Power Gas Fired Boilers play an important part in the successful operation of this business.

One Ton of material is dyed daily.

Monthly Gas consumption 200,000 cu. ft. or 2,400,000 cu. ft. annually.

Detailed information on file at A. G. A. Headquarters.

TECHNICAL SECTION

C. N. CHUBB, Chairman — F. C. WEBER, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE—1922

At Large

BATTIN, H. S., Philadelphia, Pa.
BROWN, J. A., Jackson, Mich.
COOK, H. R., Jr., Baltimore, Md.
CORNISH, R. C., Philadelphia, Pa.
FIELDNER, A. C., Pittsburgh, Pa.
FREEMAN, F. C., Providence, R. I.
HAFTENKAMP, J. P., Rochester, N. Y.
HARPER, R. B., Chicago, Ill.
HOWARD, A. C., New York, N. Y.
JONES, E. S., Sacramento, Cal.
LUNN, C. A., New York, N. Y.
MACBETH, G. T., Mt. Vernon, N. Y.
SPERR, F. W., Pittsburgh, Pa.
WARING, GEO. H., Grand Rapids, Mich.
WILLIEN, L. J., Boston, Mass.
WING, J. F., Boston, Mass.

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BATTEN, J. W., Detroit, Mich. (Michigan)
CHUBB, C. N., Davenport, Iowa. (Iowa)
CORNISH, R. C., Philadelphia, Pa. (Pennsylvania)
DUNN, F. S., Albany, N. Y. (Empire State G. & E.)
ELBERT, V. L., St. Joseph, Mo. (Missouri)
FERRIER, JAS., Atlanta, Ga. (Southern Gas)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canadian)
JOHNSON, G. M., South Bend, Ind. (Indiana)
JONES, J. B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wis. (Wisconsin)
PAIGE, C. E., Worcester, Mass. (N. E. Gas Eng.)
PAPST, H. M., Portland, Ore. (Pacific Coast Gas)
SEDBERRY, W. H., Marshall, Texas. (South Central)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Carbonization and Complete Gasification of Coal—L. J. WILLIEN, Boston, Mass.
Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
Chemical—J. F. WING, Boston, Mass.
Compressed Air for Clearing Gas Piping—J. T. GRIFFIN, Baltimore, Md.
Consumers Meters—JOS. LUCENA, Syracuse, N. Y.
Disposal of Waste from Gas Plants—I. T. HADDOCK, Cambridge, Mass.
Distribution Design—R. C. CORNISH, Philadelphia, Pa.
Gas Plant and Production—GEO. H. WARING, Grand Rapids, Mich.
Gas Pipe and Meter Deposits—R. L. BROWN, Pittsburgh, Pa.
Nominating—R. B. HARPER, Chicago, Ill.
Purification—W. A. DUNKLEY, Urbana, Ill.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.
Steaming Stop End Horizontal Retorts—C. J. HAUSCHILDT, Davenport, Ia.
Testing and Evaluation of Gas Oil—CHAS. A. LUNN, New York, N. Y.
Use of Mixture of Bituminous Coal and Coke as Generator Fuel in a Water Gas Set—C. W. BRADLEY, Chicago, Ill.

Parallel Sessions for the Technical Section

WALTON FORSTALL, United Gas Improvement Co., Philadelphia, Pa.

The relative advantage or disadvantage of holding parallel sessions of the Technical Section has been the subject of much discussion in the past. Those who have previously opposed the holding of parallel sessions have based their views on the fact that members who are interested in two or more different papers which are being presented concurrently in two different sessions must lose the value of one or the other of these papers. Mr. Forstall has ably presented one side of the case. We commend this to the consideration of our readers and would urge that they submit their comments to Association Headquarters giving their viewpoint as to the advisability of holding parallel sessions. (EDITOR'S NOTE.)

THIS article is written to present the arguments for increasing the session time of the Technical Section. Present experience indicates that three afternoons only are available for section meetings, and this means, at the outside, not more than nine hours, unless,—and here is the point,—one or more parallel sessions are held.

The subject of parallel sessions has been considered at length by the present Managing Committee of the Technical Section, which has decided adversely, for the reason, as I understand it, that it

is better to do a few things thoroughly than to fail with a more ambitious programme. It is because I believe that this decision is based on a wrong view, that I desire to state the case for parallel sessions. To do this will require a bit of ancient history.

In the 70's, 80's, and even the 90's, the American Gas Light Association was composed of superintendents and managers who, rightly or wrongly, thought their chief interest lay in problems of manufacture and they devoted most of their meeting time to such questions. The actual attendance in the meeting room during most of this period was probably always under two hundred.

With the coming of the twentieth century, it became increasingly apparent that many problems outside of the manufacturing field were calling loudly for study and solution. Distribution questions were becoming of moment with the growth of our cities, and the advent of electricity made salesmanship a subject to be considered. Past viewpoints and habits were so strong, however, that the idea of covering a larger field of work at each convention, by having sectional meetings developed very slowly and met with strong opposition from some of the most influential members of the profession, who had never missed a minute of meeting time and could not see any good in an arrangement which prevented them from attending every session. The fallacy of their reasoning will be shown later, but it is well known history that their influence and the consequent failure of the American Gas Institute to develope to their logical extent the plans for sectional formation and meeting recommended by its organizing committee, not only caused the perfectly legitimate growth of the National Commercial Gas Association and thereby delayed for a decade the much needed adequate national organization of the gas industry, but also within purely engineering fields has been responsible for the neglect of many problems whose nonsolution to the present day has resulted in much unnecessary Commission regulation and enhanced investment and operating expense.

Perhaps the best way to show the case for parallel sessions will be to begin by an abstract consideration of the purpose of trade conventions. At present most national industries have a more or less strong headquarters staff furnishing guidance to committees engaged on specific problems. When a committee's recommendation involves changes in existing practice, it is often the case that though the report may be unanimous, be signed by those best qualified to decide, and be adopted by the convention, the actual change to the new practice on the part of the whole industry may be prevented or seriously delayed by the absence of proper consideration of the report on the floor of the convention. In other words, many of these changes, to be really effective, must be "sold" to the industry and free discussion is the best means to this end. Also, there are often individual papers whose value is greatly increased if there is time for adequate question and answer on the points involved.

From the above, it follows that the progress of an industry should be limited only by its ability to obtain satisfactory committee work and to "sell" that work to its members. Now the present decision of the Managing Committee limits the technical end of the gas industry to nine hours for presentation and discussion, whether or not this excludes

from consideration certain important papers or committee reports. Among such reports will probably be that from the Committee on Consumers' Meters, which is considering this year the possibility of suggesting a standard of case dimensions and hourly capacity. Such a standard has long been needed and would be in existence now if in the past more encouragement had been given to the consideration of distribution subjects.

The ban on parallel sessions also means that every session will register an attendance of two to three hundred members, a number not conducive to the best discussion, unless each member was especially interested in every subject which is no longer the case in the present specialization of our art. In this connection, let us consider the program for Thursday afternoon as settled tentatively at this time. There are to be two papers on the scrubbing and condensing facilities of a coal gas and of a water gas plant respectively, and abundant time is being provided for their consideration. The subject is quite important, and will be of great interest to a number of men who will be sure to be on hand and some of whom will discuss it and add to the common fund of information. On the other hand, and this is so often overlooked, there will be in attendance at the Convention many members of the Technical Section whose interest in consumers' meters is much greater than in scrubbing and condensing, and whose presence as attentive listeners and pertinent discussers of the "Consumers' Meters" report would be of far more value to the industry than their state of boredom if they were faithful enough to attend the scrubbing session.

With a parallel session on Thursday afternoon, two problems would be in the process of working out, each by interested men. Without such a session, one problem must lay over a year and certain men do not get as much value from the Convention as they should.

If space permitted, this discussion could be elaborated considerably but it will be closed with some questions: If it is thought unwise to have more parallel sessions than now obtains under the plan of treating each section as a unit, is it not true that the most logical division would be at the works gate, and, therefore, we should have a Manufacturing Section and a combined Distribution and Commercial Section? Or, accepting the present sectional arrangement, if the sectional division has been a success, and of that there is no doublt, (just ask the accountants or the commercial men) where is the justification in believing that the entire technical field of the industry can be handled best without parallel sessions, when, by reason of the existence of separate sections, the commercial field is being developed through parallel sessions for advertising, accounting and commercial problems? Why should a plan which permits a man to choose between two subjects, and, therefore, to listen to the one in which he is more interested, be inferior to a plan where there is no choice?

Distribution of Sales—Gas Chemists' Handbook

(1922 Edition)

State	Gas Cos	By Product Coke Oven Cos.	Manufr. Member Cos.	Individuals (Consulting Engrs. etc.)	Public Service Comms.	Industrial Labs.	Libraries	Univ.	Book sellers	Total
Alabama	3					2				5
Arizona										
Arkansas										
California	8		1			3		1		13
Colorado	6									6
Connecticut	8					1				9
Delaware										
Dist. of Col.	1			3		1				5
Florida	3									3
Georgia	2									2
Idaho										
Illionis	14	2		1		3	1			21
Indiana	7	2	1	2						12
Iowa	11									11
Kansas	4			1						5
Kentucky	2									2
Louisiana	2									2
Maine	1									1
Maryland	4		1	1	1	1				8
Massachusetts	32	2	1	3			1	1		40
Michigan	21			4			1		1	27
Minnesota	4	1								5
Mississippi										
Missouri	5	1	1			2				9
Montana										
Nebraska	2						1			3
Nevada	1									1
New Hampshire	3				1					4
New Jersey	3	2	2	2	*1	3		1		14
New Mexico	1									1
New York	32	2	3	5		10		1	25	78
No. Carolina	4									4
No. Dakota										
Ohio	3	2	1	1		4		1		12
Oklahoma	1									1
Oregon	2									2
Pennsylvania	16	3	1	2	1	10		1	2	36
Rhode Island	1									1
So. Carolina	2					1				3
So. Dakota	2									2
Tennessee	2						1			3
Texas	4									4
Utah	1			1						2
Vermont	1									1
Virginia	4									4
Washington	6									6
West Virginia	2	1				1				4
Wisconsin	14						1			15
Wyoming	1					1				2
Canada	6					1				7
Cuba	1									1
England	1			1						2
Scotland									2	2
TOTAL	254	18	12	27	4	44	6	6	30	401

*City of Newark

Gas Chemists' Handbook

Four hundred Gas Chemists' Handbook sold up to June 21, 1922—over three hundred of which were purchased three months after publication! That's a mighty fine record and when taken in conjunction with the "Reviews" (extracts of which are published on the preceding page) we feel that the Committee who prepared the material for the 1922 Edition of the Gas Chemists' Handbook are certainly to be congratulated on the reception it has received.

While we are, of course, very pleased with the manner in which the Handbook has been received, still there are several aspects indicated by the distribution of sales which are not entirely satisfactory from the standpoint of the gas company and By-Product Coke Oven Company. We would point out particularly:

1. That 33 per cent of the sales were made outside the Industry and this percentage of outside sales is increasing.

2. Only 552 books remain in stock three months after publication, and still approximately 750 gas companies have yet to obtain their Handbook.

3. Companies are buying extensively in some parts of the country—not at all in others.

4. Forty of the 254 sales to gas companies were "repeat" orders.

5. Only 18 By-Product Coke Oven Companies have purchased Handbooks (less than Industrial Laboratories, Booksellers and Individuals), whereas the Handbook is as essential to Coke Oven Companies as gas companies.

Item 4 partially explains item 3 because the Handbook makes friends rapidly wherever introduced. But when, for instance, 32, or 50 per cent of the Massachusetts Gas companies order Handbooks and only 3, less than 8 per cent of the New Jersey gas companies do—we can't be reaching the right parties in New Jersey.

The Association is, of course, pleased that the sales of the Handbook have been so encouraging but as an Association of gas companies it would much prefer that the standard work on laboratory practice be sold first to the gas companies who are most in need of this book.

We would point out that the 552 books remaining in stock are not only subject to the demand of the 750 gas companies in the U. S. who have not yet obtained their copies but are also being purchased daily by Industrial Laboratories, Booksellers, Consulting Engineers, By-Product Coke Oven Companies, etc. Also the "repeat" orders from gas companies who are finding use for more than one copy of the Handbook are making their demand on the remaining stock.

The Association would like to feel that when the stock of the 1922 edition is exhausted that every gas company in the country that can possibly use a Gas Chemists' Handbook, will have obtained their copy. We would, therefore, urge our members (particularly in the states which make a poor showing in the foregoing Distribution of Sales) to make sure that a copy of the Handbook is available in their Company. If you want a Gas Chemists' Handbook, the time to order it is **now.**

Gas Distribution System at Gary, Indiana

LEONARD FITZGERALD, Gary Heat, Light & Water Co., Gary, Indiana.

The following description of the Gary distribution system has been secured through the Committee on Distribution Design and is published as a part of that Committee's program of familiarizing members with typical distribution systems and their development. (EDITOR'S NOTE.)

THE distribution system of the Garv Heat, Light and Water Company was installed in 1907 when the City of Gary was started.

At that time, there were very few houses in Gary and the development of streets or alleys had only been recently commenced. It was necessary to locate the alleys with a surveying crew and considerable grading was required, to lay the mains at proper levels to conform to future street and alley grades.

Steel pipe was used throughout and the system was designed to ultimately take care of a city of 200,000 people.

It was decided at the start to utilize low pressures with the intention of gradually increasing to a maximum of 40 pounds. Accordingly, all of the mains were tested at 40 pounds pressure and were found tight at that pressure. Screw joint pipe with extra heavy recessed couplings was used and wherever leaks utlimately developed, Dresser leak clamps were applied.

The main feeder from the works is 12 in. in diameter. At the center of distribution, this branches into two 10 in. and two 4 in. lines with the 12 in. continuing south for a distance of 2500 feet. It is then reduced to 10 in. for one and one-half miles and continues at 8 in. to the southern limits of the city.

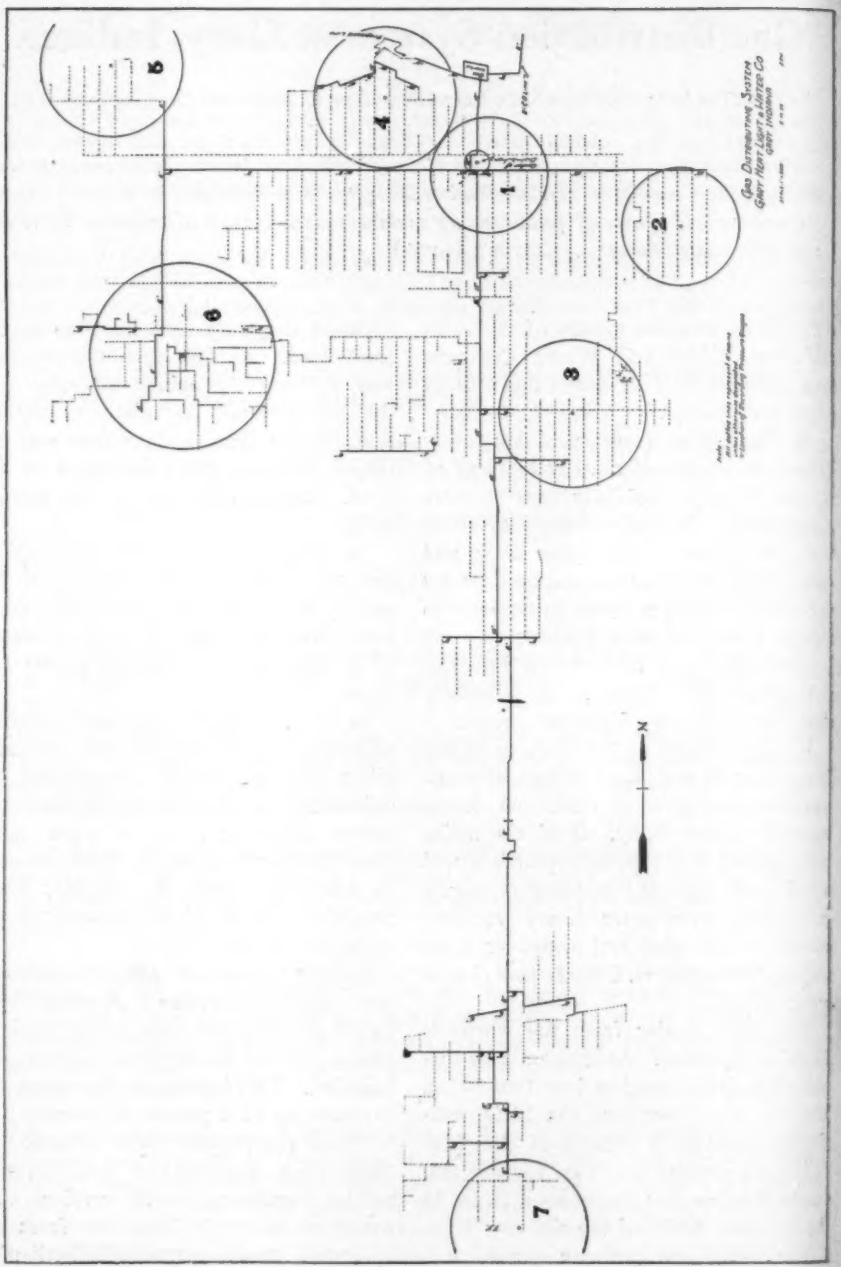
The initial gas pressure carried was 3 in. on the main feed line due to the small load. At that time the pressure was uniform throughout the city. As the city gradually increased in population and the distribution system was enlarged pressures were increased to the 6 in. maximum thrown by the storage holder.

In 1915, when the city was rapidly growing, it was found necessary to install a booster which could develop pressures to 15 in. This was done by means of a Sturtevant fan located at the gas plant.

In 1919, when the maximum pressure obtainable from the fan was not sufficient to take care of the demand requirements, a two million cubic foot gas holder, throwing 12 in. of water pressure was installed, which, when operated in connection with the booster, made possible 24 in. to 25 in. pressure on the mains at the gas plant.

During the peak of 1920, the demand was such as to require a pressure of 28 to 30 in. of water and at that time, a Roots positive blower type booster was installed. This booster makes possible a pressure up to 3 pounds if necessary.

When the pressure was increased in 1920, there was installed low pressure service regulators on all services connected to the 12 in. feed line from the gas plant to the centre of distribution


Gas Distributing System
Gary Heat Light & Water Co
Gary Indiana
1
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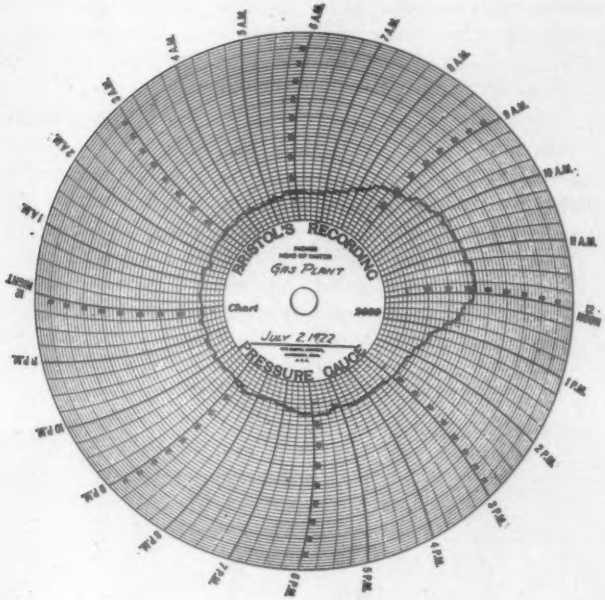
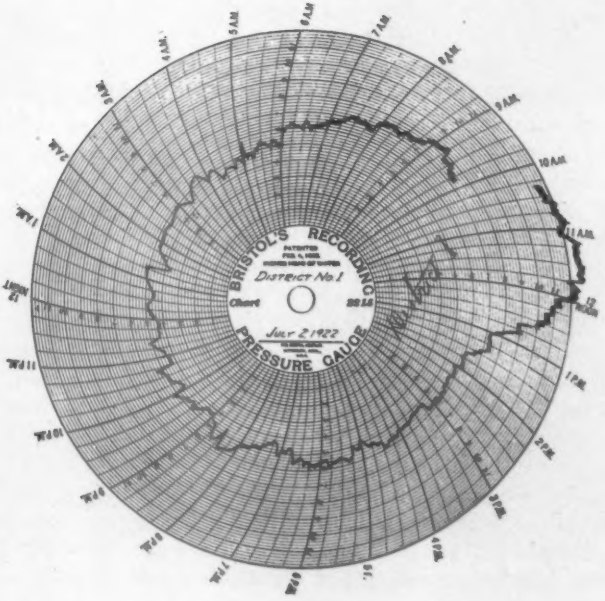

BRISTOL'S RECORDING
GAS PLANT
PRESSURE GAUGE
JULY 2, 1922

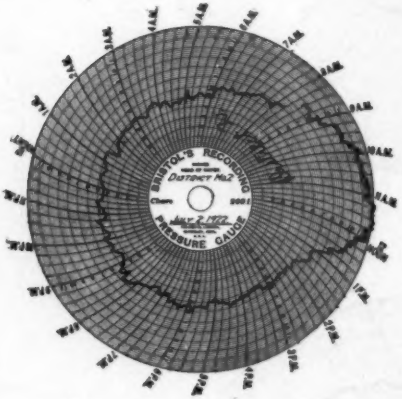

BRISTOL'S RECORDING
DISTRICT No. 1
PRESSURE GAUGE
JULY 2, 1922

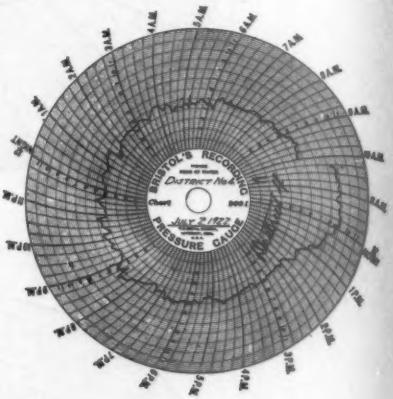
and it is the intention to gradually put in additional regulators in a gradually widening circle from the centre of distribution as the pressures are increased. An additional 12 in. feeder is now being laid, which will increase the delivery of gas to the western part of the city and will permit a considerable reduction in the initial pressures at the gas plant.

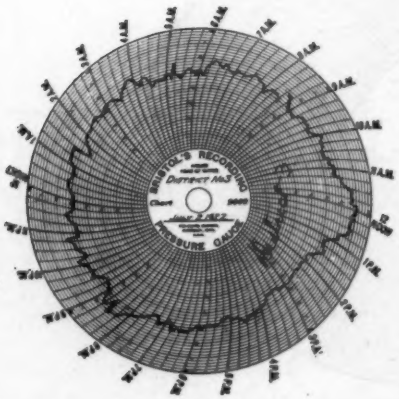
The accompanying charts are self-explanatory, showing pressures carried at the plant and the resulting pressures in the several distribution areas. A telemetric gauge at the extreme end of the feed line is used to indicate to the operators at the plant the pressure at that point, and the booster is operated so that at no time will the pressure at the point be less than 3 in.

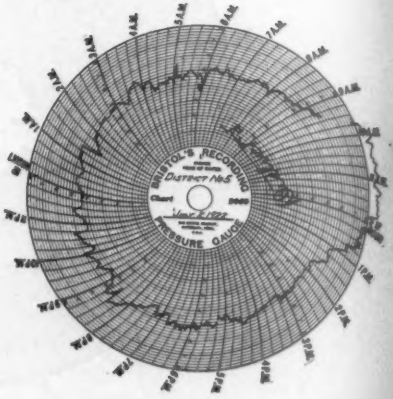
Leakage on the system has been low—being at all times under 5%.

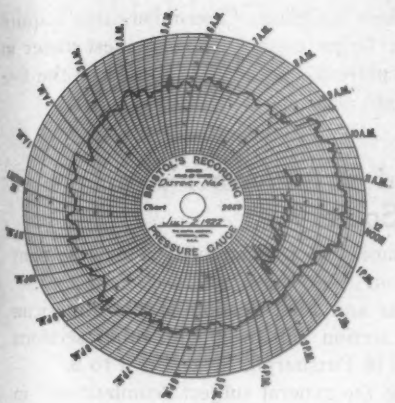
The peak load during the winter of 1921-22 was one million, six hundred thousand cubic feet with a maximum hour of one hundred and sixty thousand cubic feet.

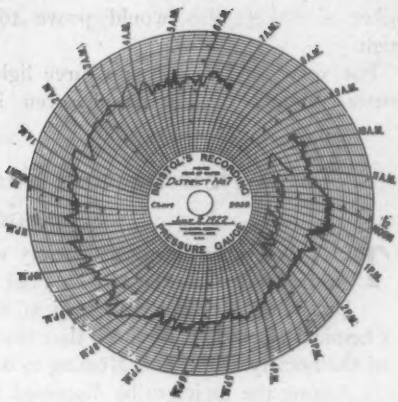












Periodical Inspection of Consumers' Meters

W. A. CASTOR, United Gas Improvement Co., Philadelphia, Pa.

THE article in the May issue of the A. G. A. MONTHLY, "Periodical Inspection of Consumers' Gas Meters" by Mr. H. Vittinghoff, prompted an investigation to determine the behavior of 3-lt. meters, in use in Philadelphia, in comparison with 5-lt. meters.

Tests of 100 of each size removed for cause during the same period of time, were compiled with the following results:

	100 3 lt meters	100 5 lt. meters
Fast Meters	17	9
Slow Meters	43	52
Correct (100) Meters	10	13
Won't Pass Gas Meters	15	14
Cease to Record Meters	15	12
Av. Fast Error %	6.63	4.34
Av. Slow Error %	7.45	6.17
Av. Net Error %	slow 3.46	slow 4.62

While the number of meters compared was small, the results probably are indicative of the general behavior of three light meters and bring out the fact that these meters when set in accordance with a properly worked out meter setting schedule can be depended upon to give satisfactory service. This cannot be done if the percentage of three light meters owned is too high, as was brought out in Mr. Vittinghoff's article. In our situation less than five per cent of the meters in service are of the three light size with only a normal stock on hand.

In order to make the best use of the money invested, there should be no hesitancy in using the three light meters owned, provided such number, in any situation, is not so large, in percentage, as to force the use of three lights in locations known to require larger sizes The percentage of three lights that may be thus installed will vary in different situations. In some the ten per cent, suggested in the article in question, might give satisfactory results, while in

other situations this would prove too high.

For very good reasons no three light meters should be purchased, even if there is a class of consumers that require no larger meters. The smallest meter in a present day schedule should be the five light size.

A New Section Formed of the American Chemical Society

THE American Chemical Society announces the formation of a new section to be known as the Gas and Fuel Section.

Dr. R. S. McBride secretary of the Gas and Fuel Section of the American Chemical Society, announces that the new section will meet with other sections of the Society at the Fall Meeting to be held in Pittsburgh, Sepember 4 to 9.

Among the topics to be discussed will be the general subject "combustion" in the form of a special symposium to be conducted under the chairmanship of Prof. R. T. Haslem of Massachusetts Institute of Technology. It will include a program of papers on chemical methods underlying fuel utilization.

Officers of the section are: Dr. A. C. Fieldner, Bureau of Mines, Pittsburgh, Pa., chairman; and R. S. McBride, Colorado Building, Washington, D. C., secretary. Dr. McBride has requested that any members of the society having papers to present at the meeting of this section should forward them in full or in abstract form to the chairman or secretary or should notify these officers regarding their intention to prepare the paper later.

Additions to American Engineering Standards Committee

THE American Engineering Standards Committee announces the following additions and changes in personnel:

F. J. Schlink, formerly of the Development Branch of the Engineering Department of the Western Electric Company, New York City, has been appointed Assistant Secretary of the Committee.

The Electrical Manufacturers Council has appointed A. L. Doremus, Crocker-Wheeler Co., New York City, as alternate for A. H. Moore, on the Main Committee of the American Engineering Standards Committee.

The Gas Group has appointed W. J. Serrill, United Gas Improvement Co., Philadelphia, Pa., as alternate for A. H. Hall on the Main Committee of the A. E. S. C.

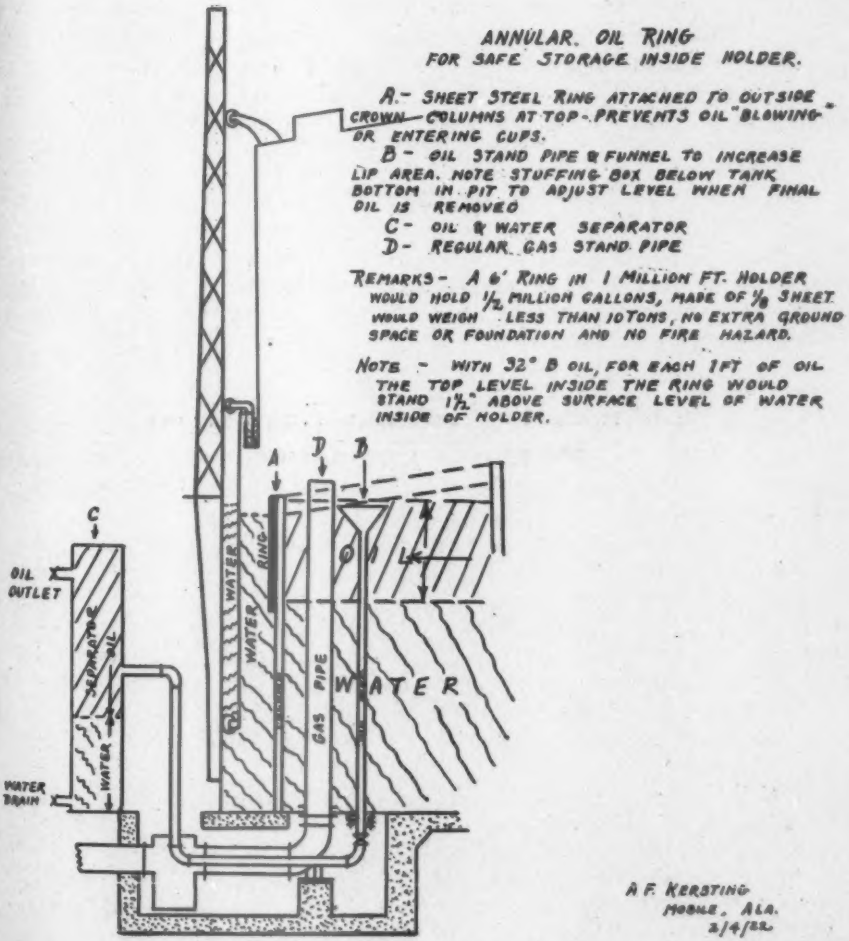
The U. S. Navy Department has designated Commander Harvey Delano, Bureau of Ordnance, Washington, D. C., Vice Commander H. F. Leary to represent the Navy Department on the Main Committee of the A. E. S. C.

The U. S. War Department has appointed Major Glen F. Jenks, Ordnance Dept., U. S. A., Washington, D. C., as alternate to Brig. Gen. W. S. Pierce, Ordnance Dept., U. S. A., Washington, D. C. on the Main Committee of the A. E. S. C.

Holder Tank Oil Storage Wrinkle

A. F. KERSTING, Alabama Power Co., Birmingham, Ala.

SEVERAL years ago I conceived an idea for the safe storage of gas oil in holder tanks by means of a fixed annular ring inside the holder tank, which would prevent the oil reaching the "cups" or blowing out under the bottom lift. I had previously had experience with storing gas oil in relief holders tanks, that were in use, and found a serious hazard in the chance of the oil getting outside of



the holder. I recognized the increasing hazard in this oil escaping in the case of the telescopic holders.

This annular ring storage provision could be made in large storage holders, and at a relatively small expense, and the great capacity obtainable would often permit considerable economies in the deliveries of oil at times when the market price is especially favorable.

The enclosed sketch shows a simple cross section of the idea applied to the telescopic holder. Note the provision for putting oil in and removing as made by oil standpipe with large size funnel at surface level, so that when the oil stock is thinned out to a matter of inches the minimum amount of water would be removed. In taking out the last fraction of storage the water drain with oil could easily be separated in a relatively small vertical separator. Also note stuffing box provision for adjusting level of oil funnel from connection pit. Of course, additional water must be fed to the holder tank as the oil is removed, to insure correct working seal of the holder. In my opinion, a very light iron would suffice for this oil ring, and it could be directly supported in the upper half of the tank on the outer ring of the crown supporting columns.

Wooden Gas Mains

From Utility Bulletin.

When a gas system was installed in Canandaigua more than seventy years ago there was laid in the main street a six inch wooden trunk line 1,800 feet long. In a survey of the distribution system this spring it was decided that, since this wooden trunk line had seen such long and faithful service, it must be time to give it a well earned rest.

But when a section of the pipe was uncovered the engineers changed their minds because there was disclosed a remarkable illustration of the durability of the old fashioned gas main. Although this wooden pipe had been lying submerged in water, it appeared to be as sound as the day it was laid. A hole was bored in it with an ordinary carpenter's bit. The inside of the log was just as sound as the outside. Its thickness was found to be nearly two and one-half inches, making the outside diameter of the log eleven inches.

Chips from the boring showed there had been no seepage through the fiber and the wood was not impregnated with a gas odor. There was only a thin film on the inside of the pipe. Otherwise, the wood was fresh and clean. In laying this historic pipe line one end of the log was turned down for a few inches to about half its original thickness, and this was inserted into the enlarged bore of the next length, then an iron band was drawn tightly over the joint. The iron band had not survived as well as the wood. Several of the joint bands were found to have rusted through and had to be removed.

Employment Bureau

SERVICES REQUIRED

WANTED—Fitter who can do good work on installation of water heaters, ranges and who thoroughly understands Gas Company appliance work. Address A. G. A.
Key No. 91.

HIGH GRADE Industrial Sales Engineer wanted. Must be man having had factory experience and knowledge of house heating. Gas company in middle west has need of such a man and requests applicants to give full particulars of experience. Appointment for interview will be arranged. Address American Gas Association.
Key No. 93.

MANAGER WANTED—for small, water gas plant within 200 miles of New York. Applicant must be familiar with manufacturing distribution and commercial functions and possesses a personality that would be pleasing to the public. State age, previous experience, salary wanted, and all other pertinent facts. Address A. G. A.
Key No. 95.

SERVICES OFFERED

WANTED—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in any department. Address A. G. A.
Key No. 134.

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.
Key No. 135.

WANTED—Position of responsibility as Manager or Industrial Fuel Engineer—18 years varied experience in the gas business. References and service record furnished. Address A. G. A.
Key No. 142.

ENGINEER—Producing results in operating desires to make change, either as Engineer or Assistant Engineer of Works with output over 20,000,000 daily output. Or in Managing capacity. Address A. G. A.
Key No. 135.

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had a practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.
Key No. 114.

WANTED—Man of wide executive experience in gas accounting, statistics and system and a record of success in gas appliance merchandising, is now, after illness of several years, prepared to sacrifice in size of salary if necessary to obtain exactly the sort of position he is looking for. Inquiries solicited. Address A. G. A.
Key No. 141.

INDUSTRIAL FUEL ENGINEER—Knowing heat treatment as applied to general industrial problems, house heating, hot water storage, and who knows the construction, operation and proper installation of every appliance he handles. Who has sold himself "Gas" as the heat treating medium, who has excellent "business getting" and executive abilities, would like to change to corporation where his abilities can be better utilized. Adress A. G. A.
Key No. 139.

POSITION WANTED—Technical graduate with some experience in all branches of combination, manufactured, and natural gas companies, but particularly as head of industrial and new business departments, desires responsible position with a future. Address A. G. A.
Key No. 140.

WANTED—Graduate Gas and Electrical Engineer—age 33, married. Technical degrees, B. S., M. S. & E. E. Associate member A. I. E. E., member A. G. A. Nine years practical gas and electric public utility operation in responsible capacity. State Public Service Commission Engineer. Prefer work as Manager or Assistant Manager of gas or combination gas and electric property. Now in New York. Location anywhere. Best of references. Address A. G. A.
Key No. 143.

WANTED—Change in employment, where experience and sincere efforts may be better utilized and appreciated. Technical and with 18 years diversified experience in gas lines, having held positions of responsibility in manufacturing and distribution, in industrial fuel and in research engineering. Address A. G. A.
Key No. 144.

WANTED—Man 38 years of age with 20 years experience in both coal and water gas plants, would like to connect with some company, (preferably a small plant in New England) in the capacity of Manager, Superintendent, or Asst. to Superintendent. Best of references. Address A. G. A.
Key No. 145.

WANTED—Position as Assistant to Superintendent of either large coal or water gas plant, by young man twenty-five years of age who is now employed by combination coal and water gas plant in South. Experienced in calorimetry, statistics, plant records and general office work and would prove valuable to busy executive. Prefers Southern or Eastern territory, but will consider any location. Address A. G. A.
Key No. 146.

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